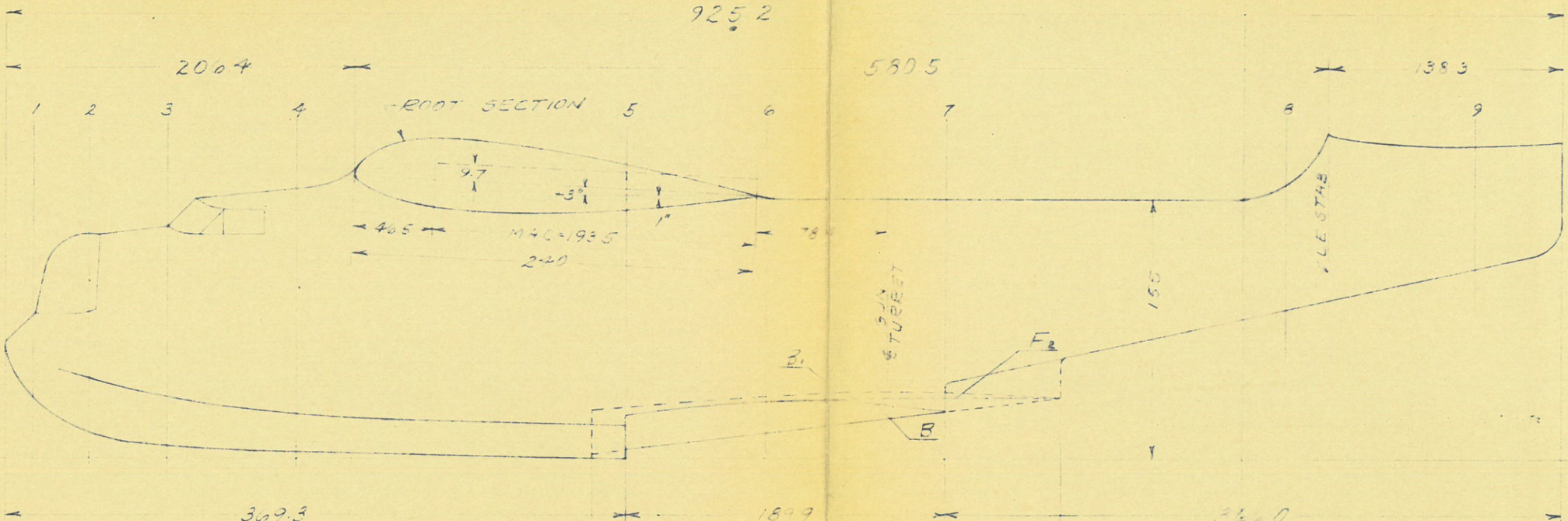
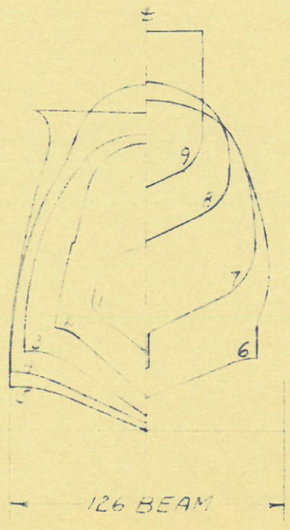
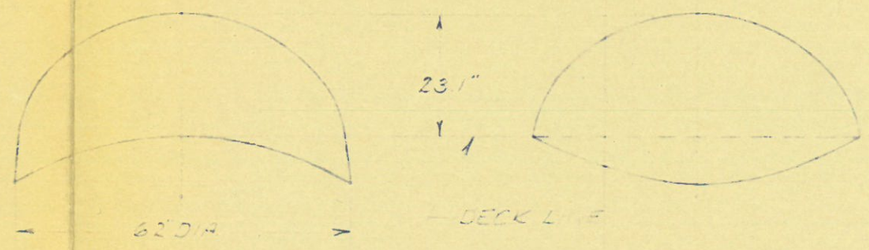
GALCIT REP. 221

PAGE 47
FIG. 4





HULL
1/10 ACTUAL SIZE REF. DWG. 29 2020
FRONTAL AREA = 118 SQ FT
SIDE AREA (BELOW WING & STUB.) = 752 SQ. FT.



GUN TURRET M
1/35 ACTUAL SIZE REF DWG 29 2040
FRONTAL AREA = 1.91 SQ FT.
SIDE AREA (ABOVE DECK LINE) = 7.24 SQ FT.

HULLS B, B_1, FAIRING F_2, AND TURRET M

9-19-38
L.B.M.

GALCIT RER 221

PAGE 45
FIG 41

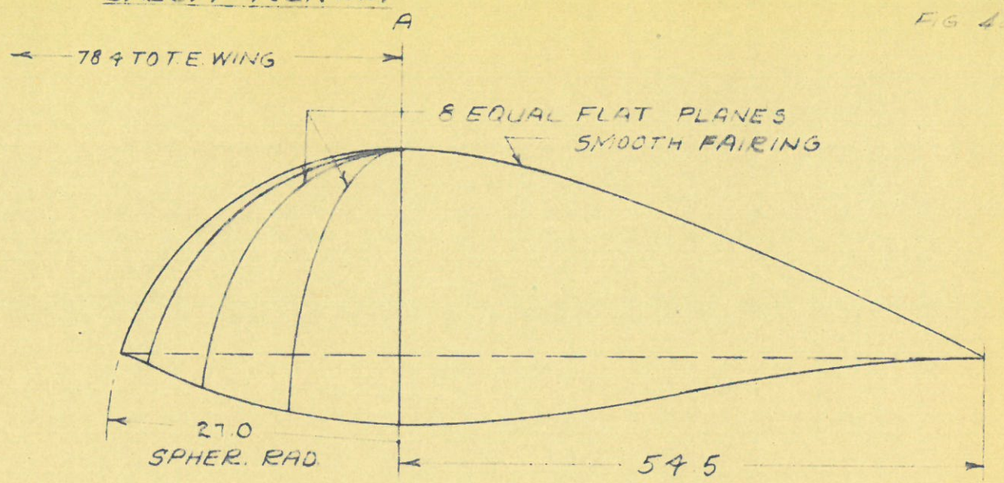


FIG. 1

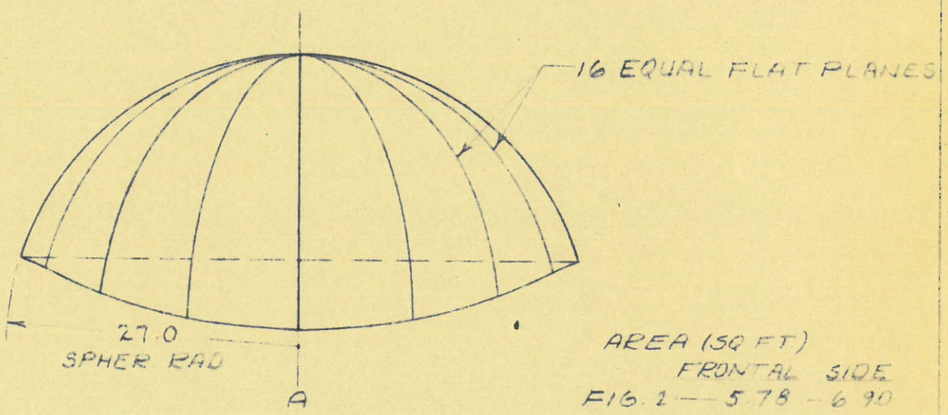
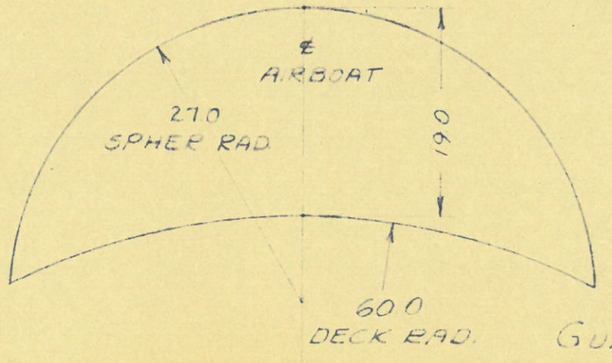


FIG. 2

AREA (SQ FT)
FRONTAL SIDE
FIG. 2 — 5.78 — 6.90
FIG. 2 — 5.78 — 5.03
SIDE AREA TAKEN
ABOVE DECK LINE



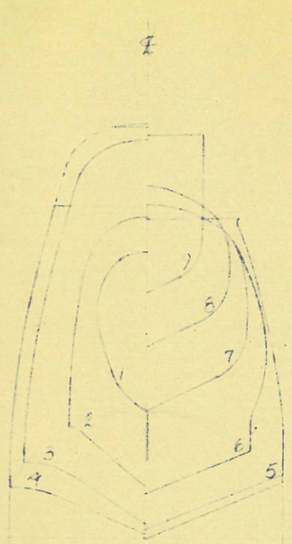
M_3

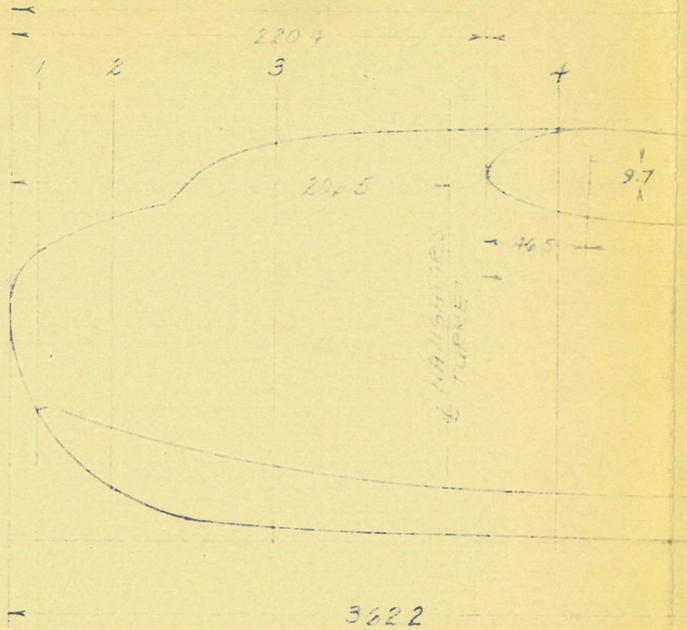
SEC. AA

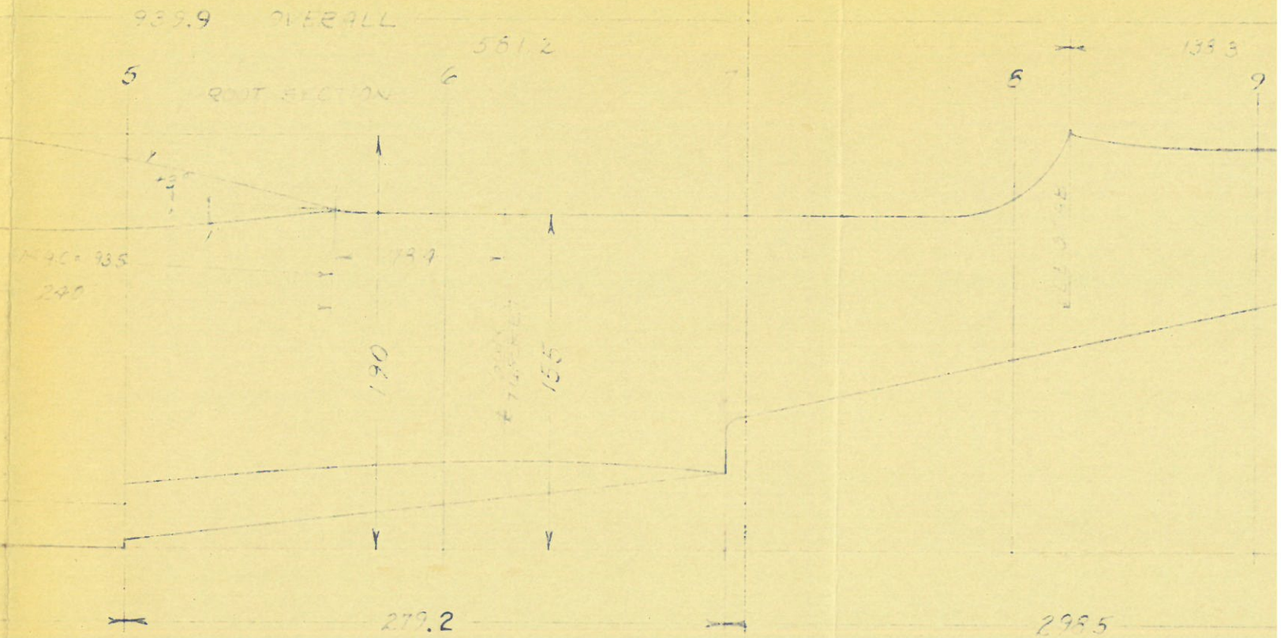
XPB2Y-1
GUN TURRET M_3
PROPOSED
PRODUCTION MODEL

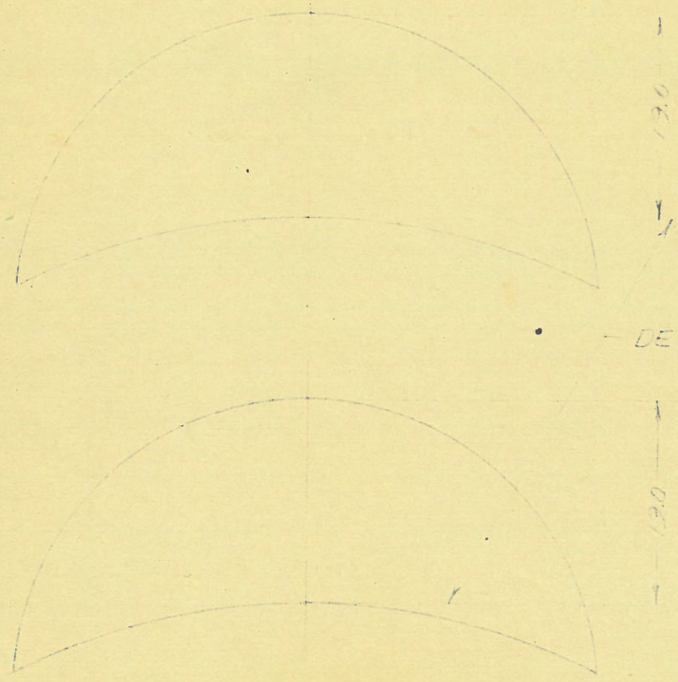
REF DWG. 29Z043
SCALE 1"=1'4" L.E.M. 10-3-39

GALCIT REP 221





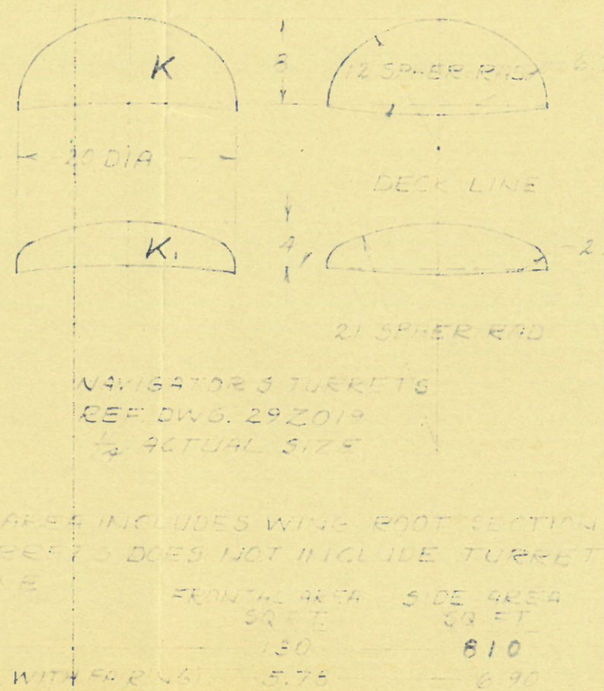




HULL B_2 AND TURRETS K AND M_4

2 GUN TURRETS
CEF DWG 29 2043
1/4 ACTUAL SIZE

1/8 ACTUAL SIZE



NAVIGATOR'S TURRETS
CEF DWG. 29 2019
1/4 ACTUAL SIZE

NOTE: HULL SIDE AREA INCLUDES WING ROOT SECTION
SIDE AREA OF TURRETS DOES NOT INCLUDE TURRET
BELOW DECK LINE

	FRONTAL AREA SQ FT	SIDE AREA SQ FT
HULL	150	810
GUN TURRET WITH FAIRING	5.74	6.90
GUN TURRET (EXPOSED)	5.74	5.03
NAV'S TURRET 3 (SH)	4.6	4.91
NAV'S TURRET 4 (GH)	5.8	4.62

XPB2Y-1 PROPOSED PRODUCTION MOD

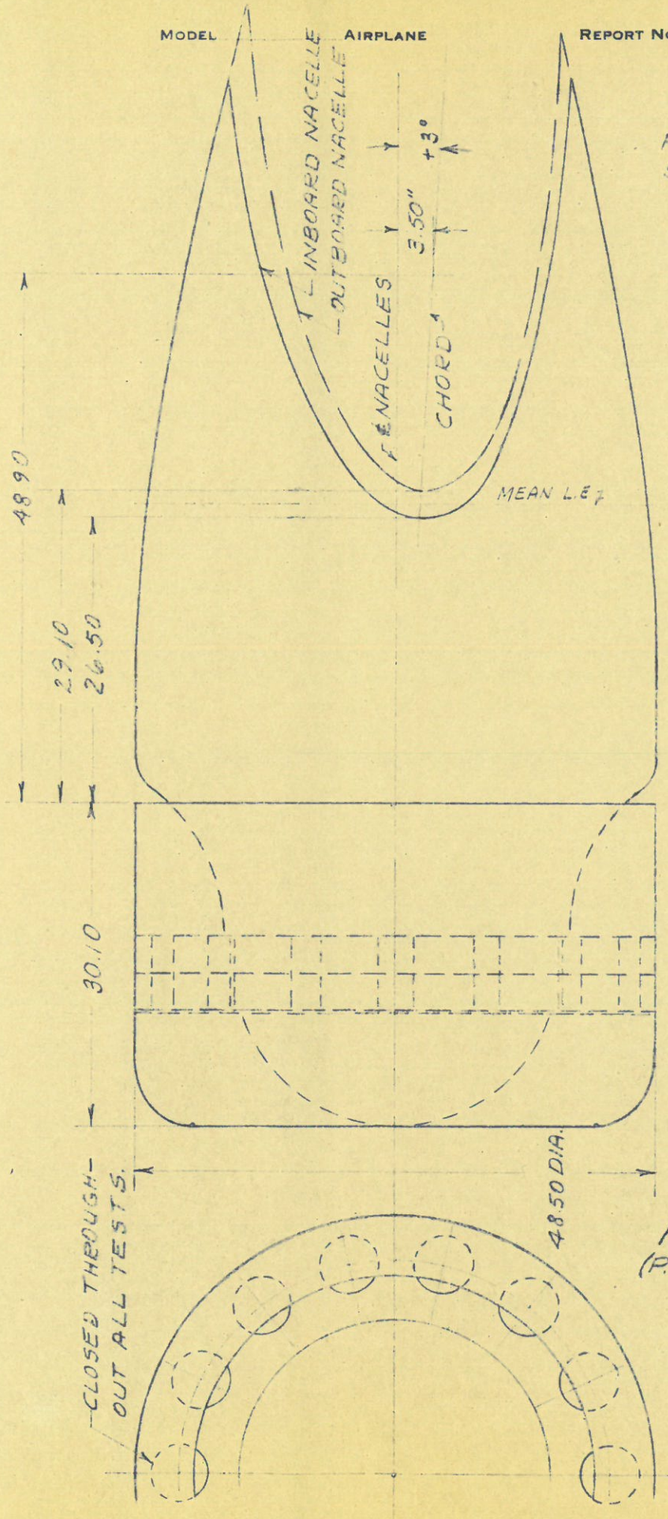
FORM NO. 154 FRYE & SMITH

GALCIT REP. 221

CONSOLIDATED AIRCRAFT CORPORATION

PAGE 50
FIG. 6

MODEL _____ AIRPLANE _____ REPORT NO. _____



FRONTAL AREA = 12.8 SQ. FT.
SIDE AREA (FWD. OF MEAN LEADING EDGE = 19.2 SQ. FT.

REF. DWG. 29Z033

XPB2Y-1
NACELLES N AND Nc
(P. & W. R-1830-66 ENG'S)
1/4 ACTUAL SIZE

BY _____

CHECKED _____

L.S.M.
9-13-38.

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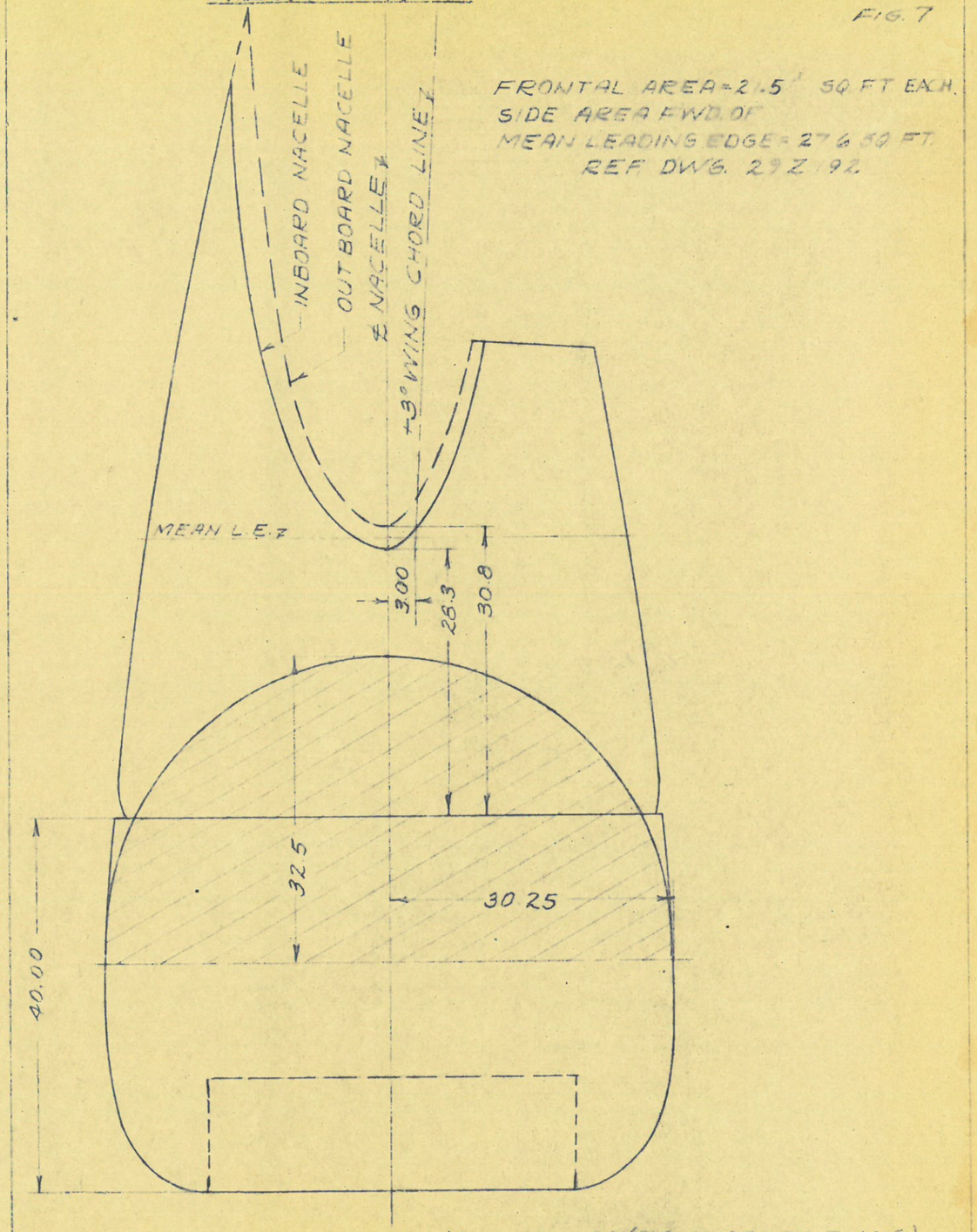
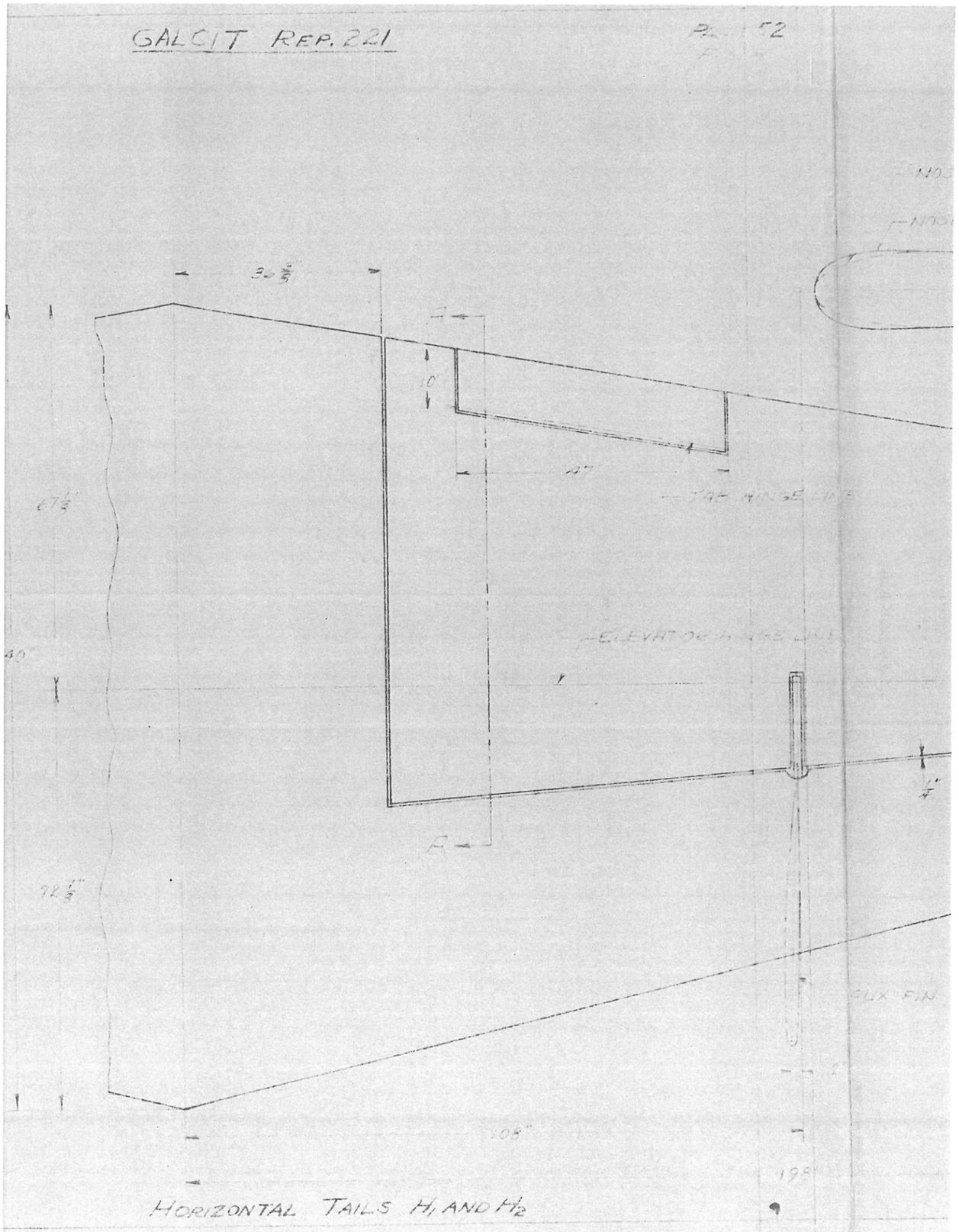
FRONTAL AREA = 21.5 SQ. FT. EACH.
SIDE AREA FWD. OF
MEAN LEADING EDGE = 27.6 SQ. FT.
REF. DWG. 29Z192



NACELLES N_2 (P&W 1830-76 ENGS.)
XPB2Y-1 PROPOSED PRODUCTION
MODEL

1/14 ACTUAL SIZE
8-30-38 (E.M.)

GALCIT REP. 221



HORIZONTAL TAILS H_1 AND H_2

HORIZONTAL TAIL
XPB2Y-1
SCALE 1-20 NOTED

CONTOUR M

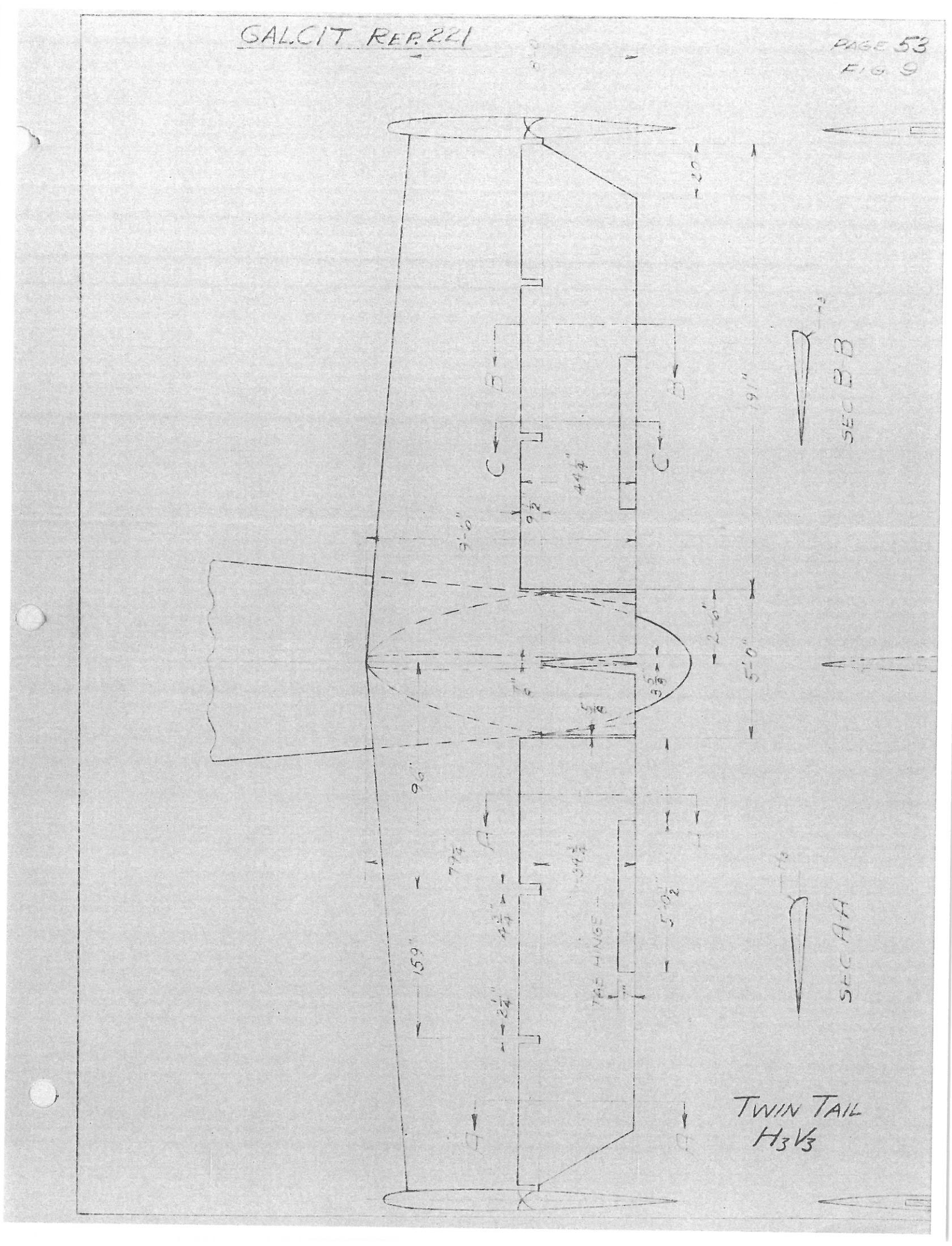
CONTOUR M2

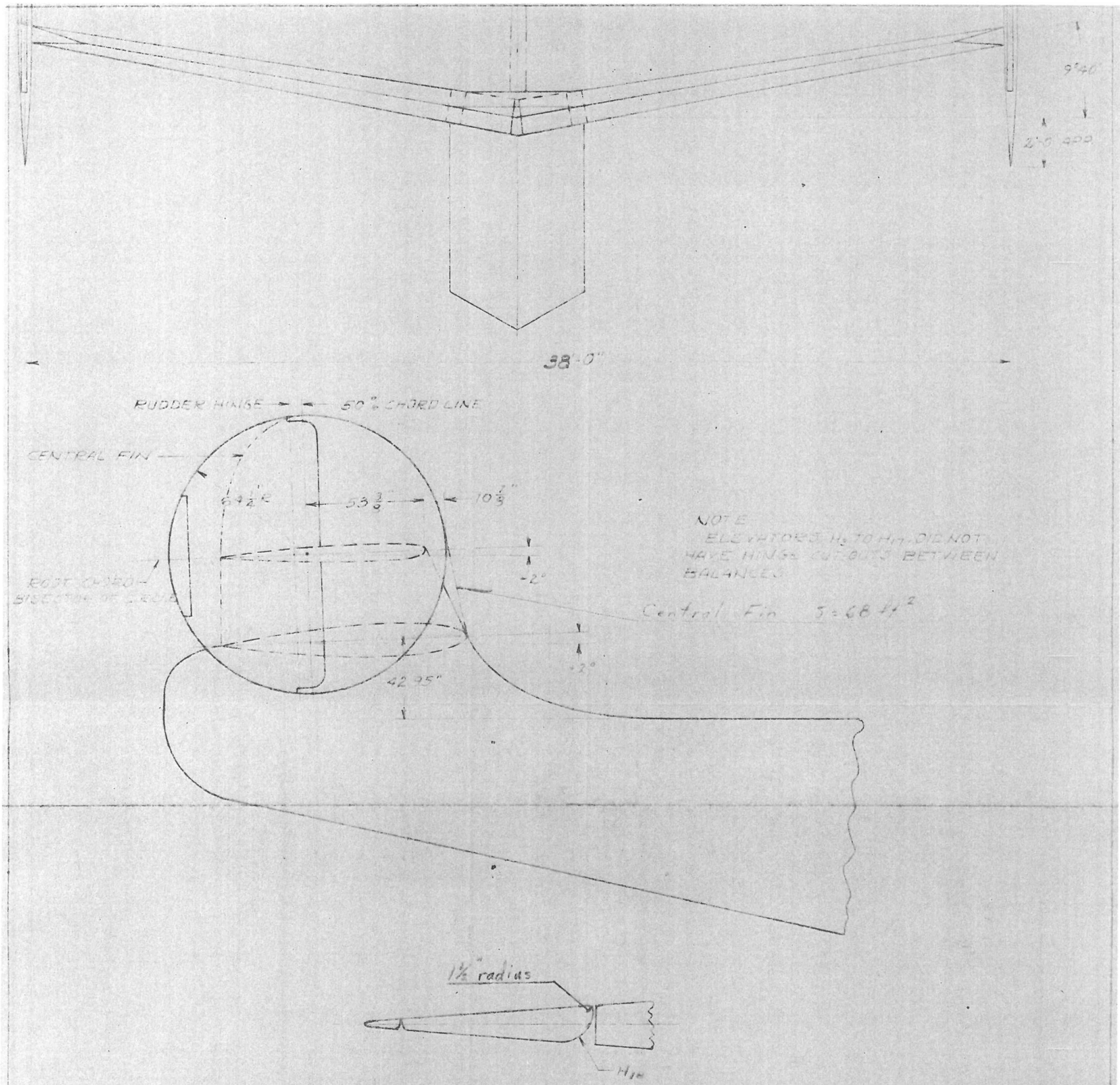
1-6 1/2 SIZE

3 1/2 R

33 1/2

25 3/8


SEC B-B
SEC A-A
TAB HINGE
TWIN TAIL
H3V3



H_{19} SAME AS H_3 WITH CUTOUTS FOR HINGES ETC.
H_{18} SAME AS H_{18} WITH $1\frac{1}{2}$" RADIUS ON NOSE AND NO FAIRING ON T.E. OF STABILIZER

TWIN TAIL-(H_3-V_3)
XPB2Y-1
GENERAL ARRANGEMENT & HORIZ. SURFACE DATA
SCALE ½"=1'-0" & NOTED

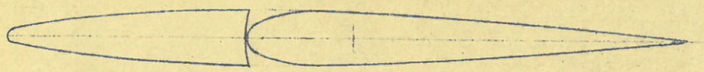
FORM NO. 154 PRUF & SMITH

GALCIT REP. 221

CONSOLIDATED AIRCRAFT CORPORATION

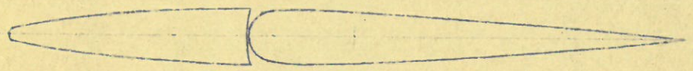
FIG. 10

MODEL ..... AIRPLANE REPORT NO. .....



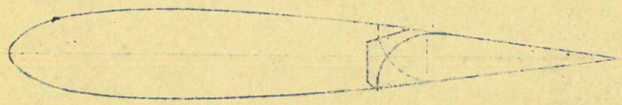
H_1

22% BALANCE
POINTED NOSE
SEE 29Z041



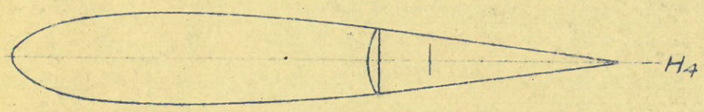
H_2

22% BALANCE
ROUNDED NOSE
SEE 29Z041



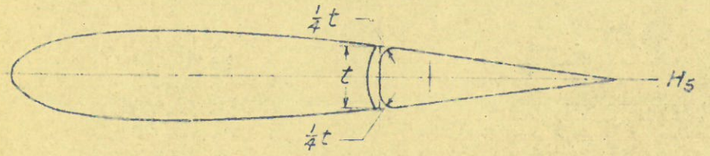
H_3

22.4% BALANCE
9½" NOSE LENGTH
SEE 29Z040



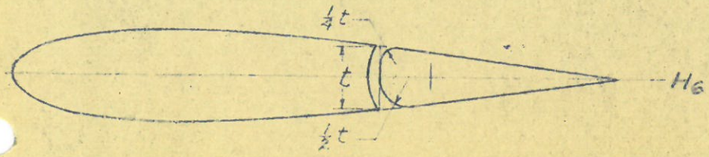
H_4

22.4% BALANCE
9½" NOSE LENGTH



H_5

22.4% BALANCE
9½" NOSE LENGTH



H_6

22.4% BALANCE
9½" NOSE LENGTH

BY .....

CHECKED .....

STABILIZER AND RUDDER PROFILES IN $H_1, H_2, H_3, H_4, H_5, H_6$

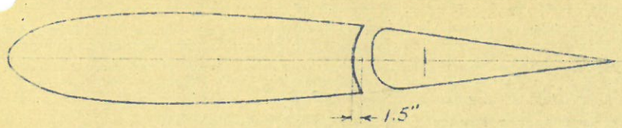
FORM NO. 13 FRYE & SMITH

GALCIT REP. 221

CONSOLIDATED AIRCRAFT CORPORATION

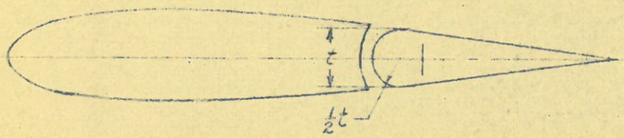
FIG 11

MODEL ..... AIRPLANE REPORT NO. .....



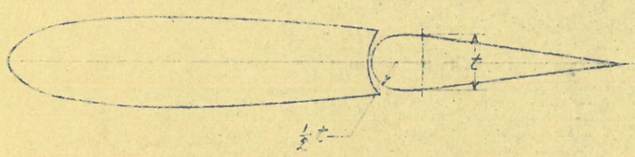
H_6 + 1.5" GAP

22.4% BALANCE
9½" NOSE LENGTH



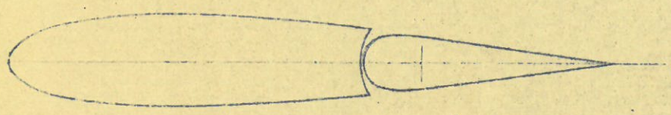
H_7

22.4% BALANCE
9½" NOSE LENGTH



H_8

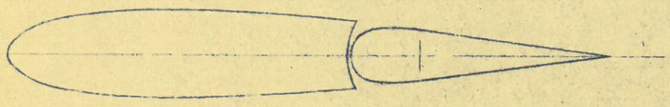
22.4% BALANCE
9½" NOSE LENGTH



H_9

24.1% BALANCE
NOSE LENGTH { 10" TIP / 11" ROOT

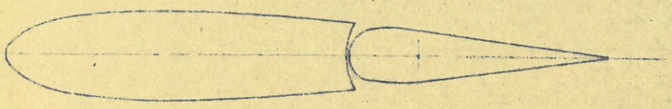
SAME AS H_8 EXCEPT FOR EXTENSION OF NOSE



H_{10}

27.3% BALANCE
NOSE LENGTH { 12" TIP / 13" ROOT

SAME AS H_8 EXCEPT FOR EXTENSION OF NOSE



H_{11}

27.3% BALANCE
NOSE LENGTH { 12" TIP / 13" ROOT

$H_{11} = H_{10}$ WITH LOWER NOSE REMOVED SO AS NOT TO PROTUDE FOR -10° ELEVATOR.

BY .....

CHECKED .....

STABILIZER AND RUDDER PROFILES IN H_6 + 1.5" GAP, H_7, H_8, H_9, H_{10}, H_{11}.

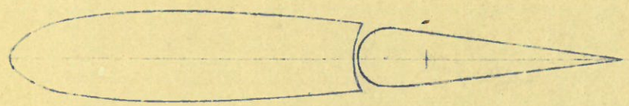
FORM NO. 754 — FRYE & SMITH

GALCIT REP. 221

CONSOLIDATED AIRCRAFT CORPORATION

PAGE 56
FIG. 12

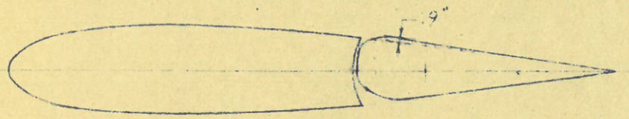
MODEL ..... AIRPLANE REPORT NO. .....



H_{12}

27.3 % BALANCE
NOSE LENGTH { 12" TIP / 13" ROOT

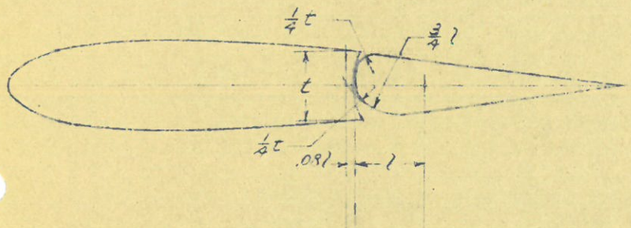
H_{12} = H_{11} WITH MIDDLE PORTION OF BALANCE BUILT UP.



H_{13}

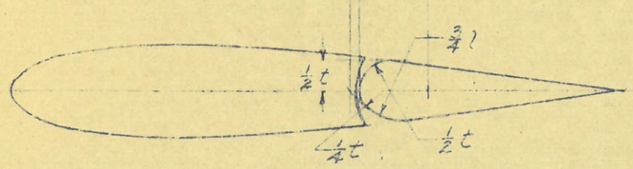
27.3 % BALANCE
NOSE LENGTH { 12" TIP / 13" ROOT

H_{13} = H_{14} WITH .9" ADDED TO TO UPPER NOSE SECTION



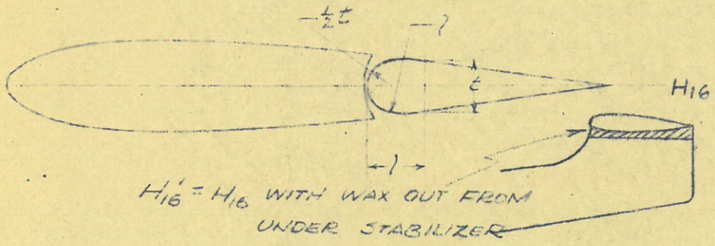
H_{14}

27.3 % BALANCE
NOSE LENGTH { 12" TIP / 13" ROOT



H_{15}

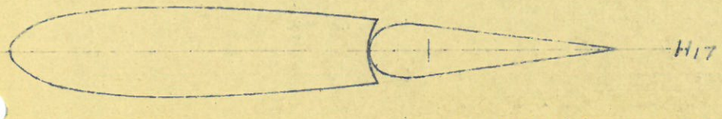
27.3 % BALANCE
NOSE LENGTH { 12" TIP / 13" ROOT



H_{16}

24.1 % BALANCE
NOSE LENGTH { 10" TIP / 11" ROOT

H_{16}' = H_{16} WITH WAX OUT FROM UNDER STABILIZER



H_{17}

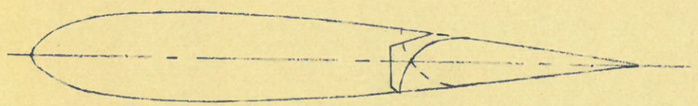
24.1 % BALANCE
NOSE LENGTH { 10" TIP / 11" ROOT

H_{17} = H_6 WITH 2 LAYERS CELLOPHANE TAPE (.006") ON NOSE.

BY .....

CHECKED .....

STABILIZER AND RUDDER PROFILES IN $H_{12}, H_{13}, H_{14}, H_{15}, H_{16}, H_{17}$



H_{19}

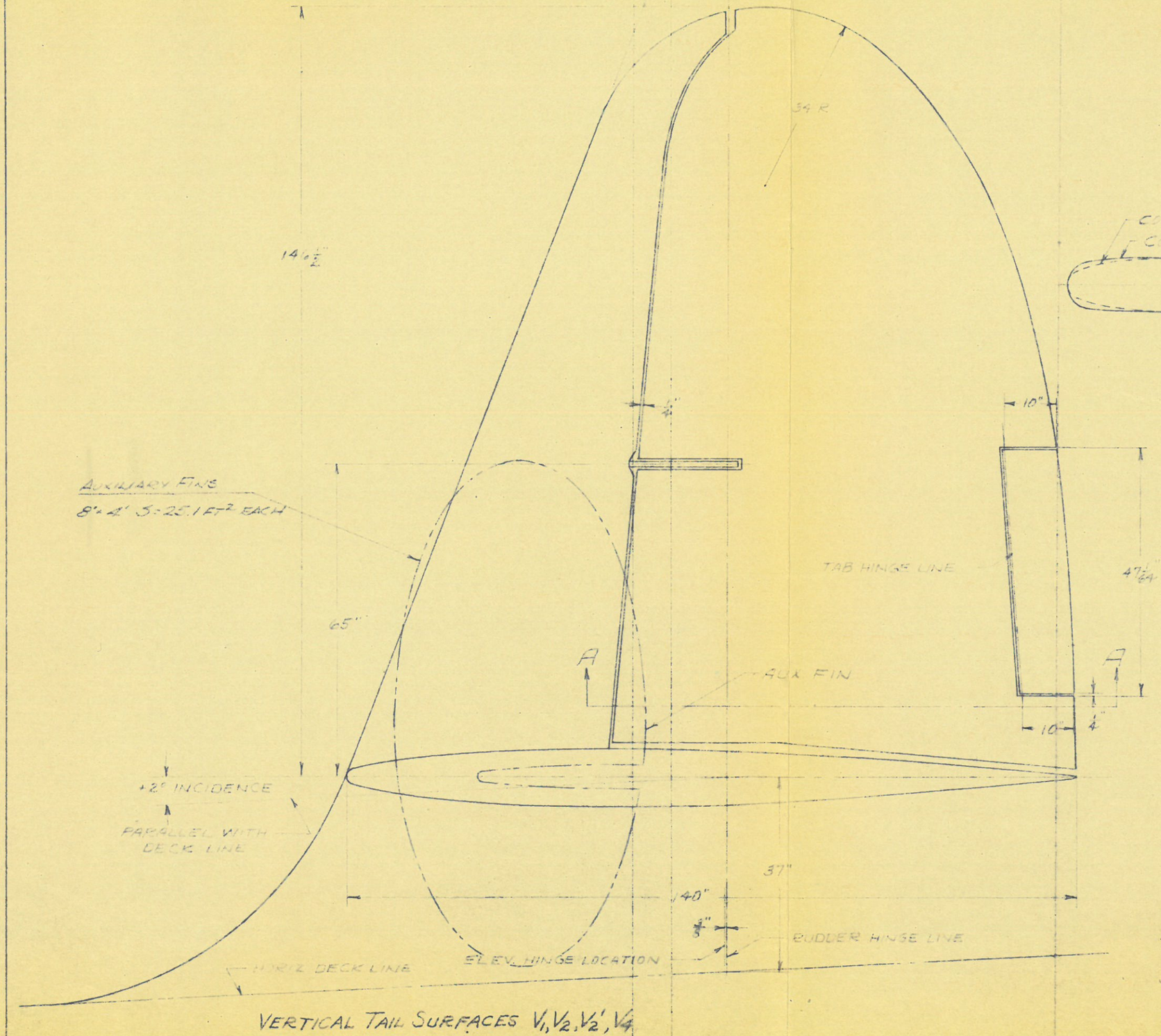
21.7 % BALANCE
SAME AS H_3, WITH
HINGE CUT-OUTS

H_{18}

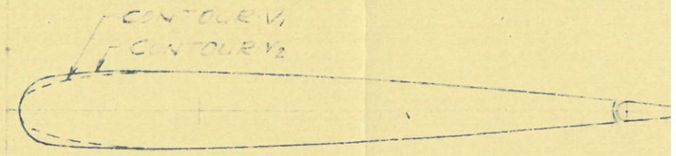
21.4% BALANCE
SAME AS H_{19}, WITH
1½" RADIUS ON CORNER
OF NOSE

STABILIZER AND RUDDER PROFILES IN H_{18} AND H_{19}

VERTICAL
/P52
SCALE: 1"



VERTICAL TAIL SURFACES V_1, V_2, V_2', V_4



SEC AA

NOTE:
V_1, V_2, V_2', V_2'' INCLUDE AU
$V_4 = V_2$ MINUS AUXILIARY
INCLUDING SMALL BR
WHICH SUPPORT AUXIL

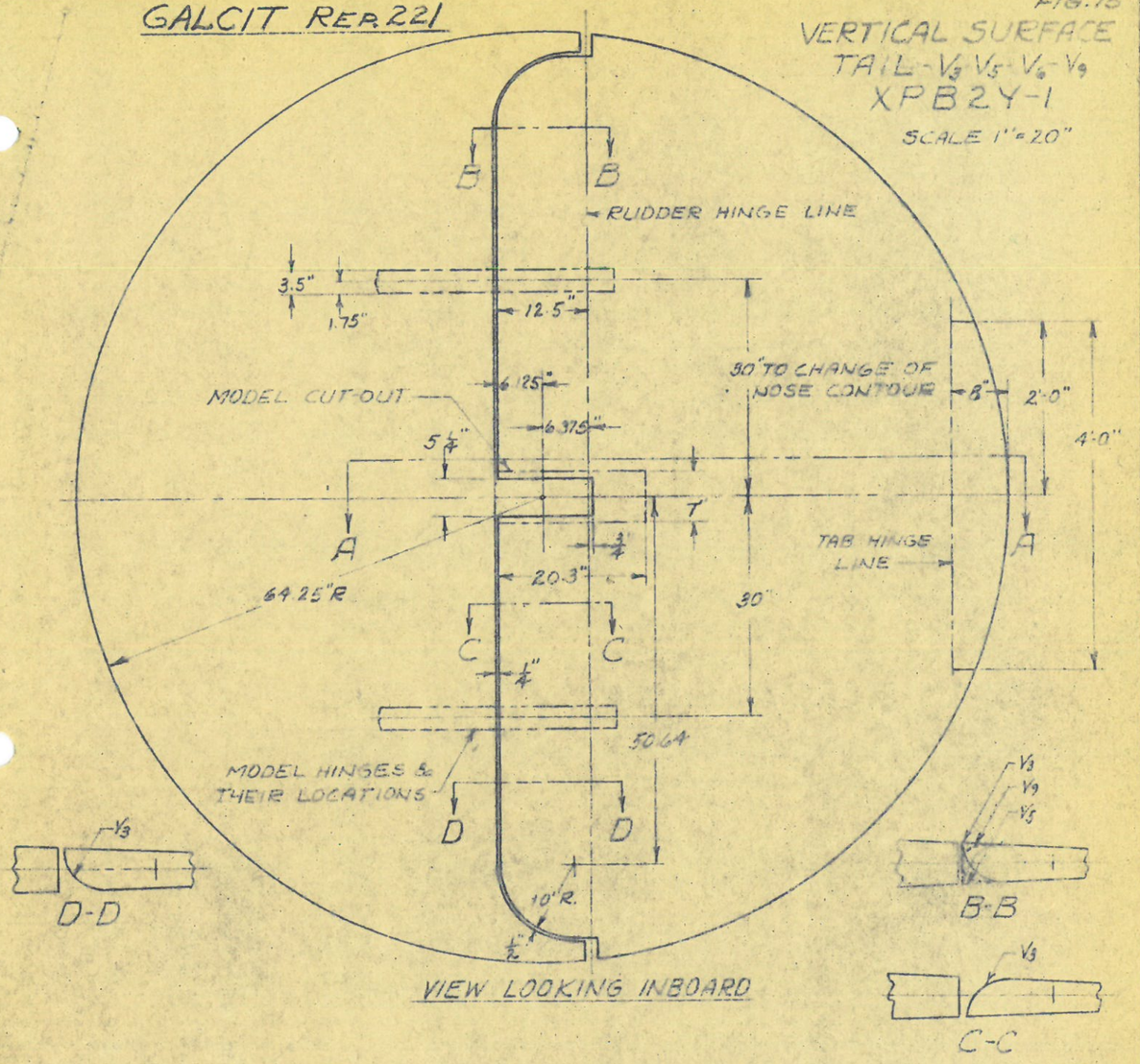
NOTE -
WITH V_1 V_2 & V_2' THE FIN WAS UNDER
THE RUDDER WAS UNSYMMETRICAL
V_2 THE NOSE LENGTH AT SEC AA, V
SHORT. V_2'' WAS CORRECT TO DRWG. E
TAB WAS OMITTED

FIG. 15

GALCIT REP. 221

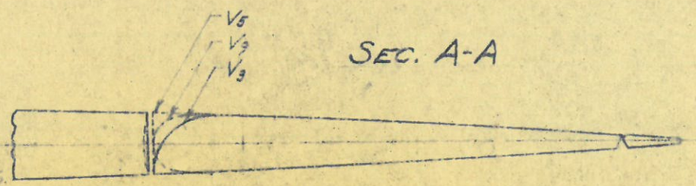
VERTICAL SURFACE TAIL - V_3 V_5 V_6 V_9 XPB2Y-1

SCALE 1" = 20"



$V_6 = V_3$ + CENTRAL FIN

V_9 SAME AS V_3 BUT WITH NO HINGE CUTOUTS AND CORRECT SIZE CENTER CUTOUT



SEC. A-A

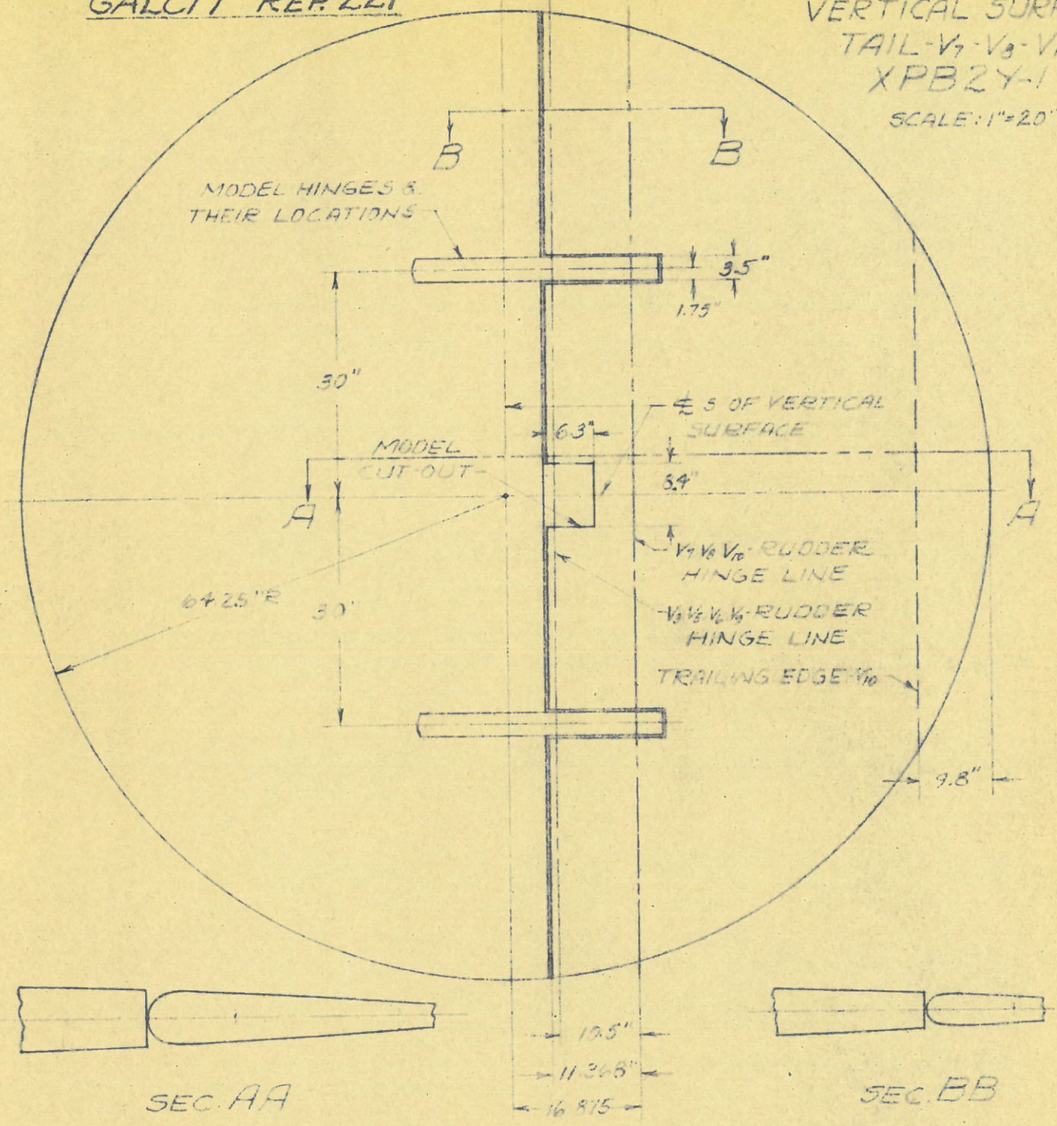
NOTE -
V_3, V_5, V_6 & V_9 HAD HINGES & CENTER CUT-OUT AS SHOWN BY PHANTOM LINES.

VERTICAL TAIL SURFACES V_3, V_5, V_6, AND V_9

FIG. 16

GALCIT REP. 221

VERTICAL SURFACE
TAIL - V_7 - V_8 - V_{10}
XPB2Y-1
SCALE: 1" = 2.0"



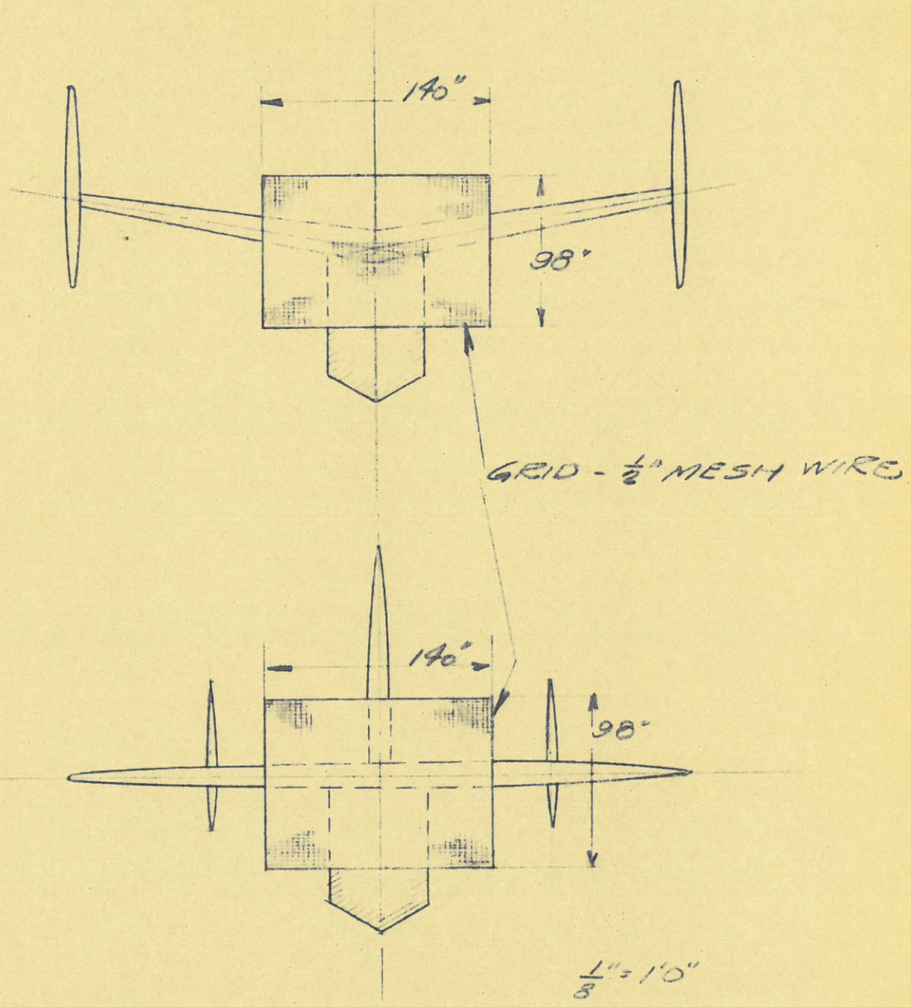
NOTE: $V_7 = V_8$ + CENTRAL VERTICAL SURFACE

ACTUAL AREA OF RUDDER, AFT OF HINGE, IN V_{10} IS 27.00 FT.²(EACH). NOMINAL AREA AND CHORD SAME AS IN V_8, HAVE BEEN USED IN COMPUTING C_{HF}

VERTICAL TAIL SURFACES V_7, V_8, V_{10}

GALCIT REP. 221

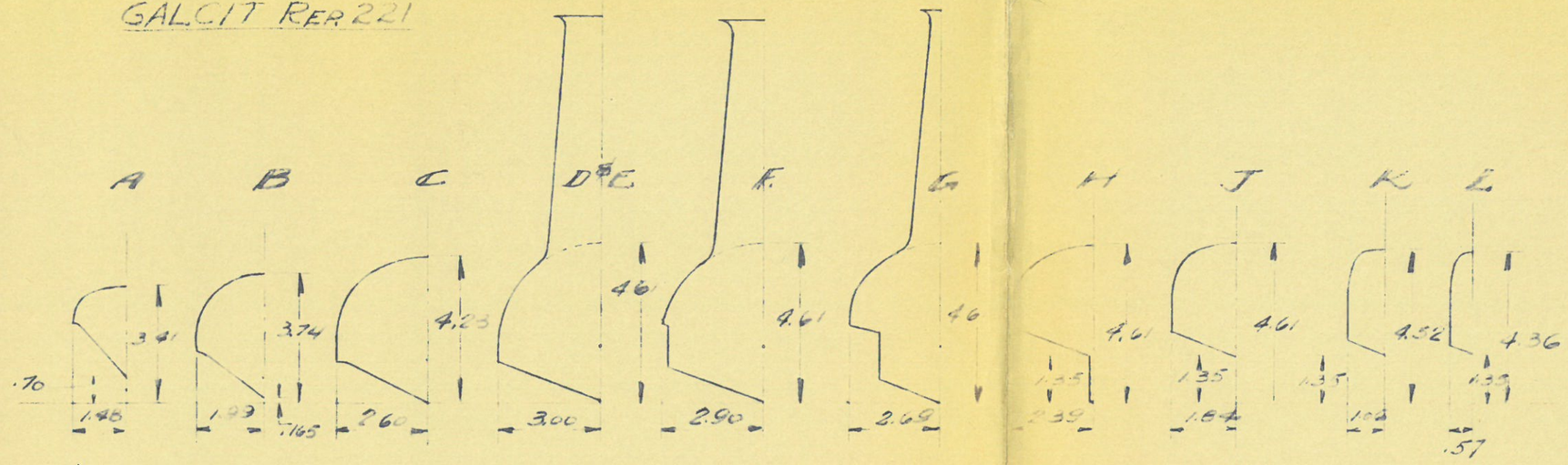
PAGE 61
FIG. 17

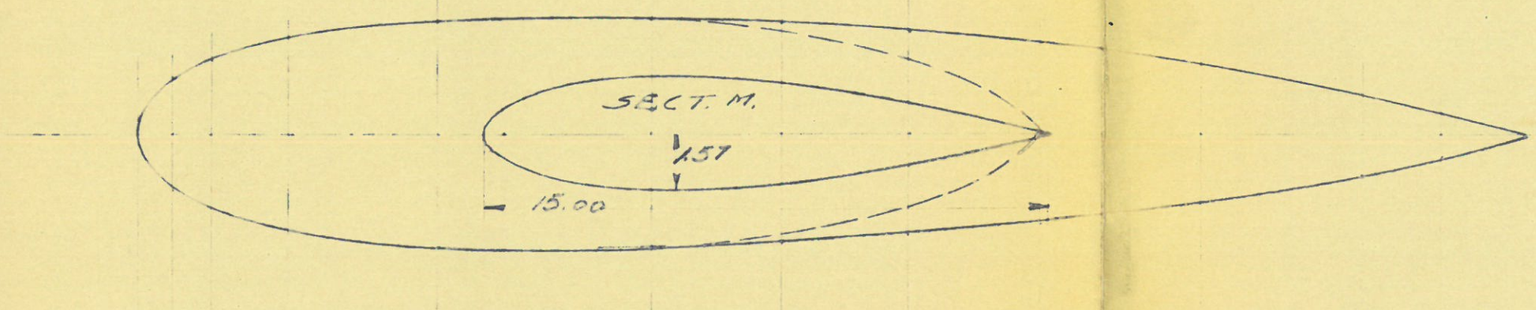


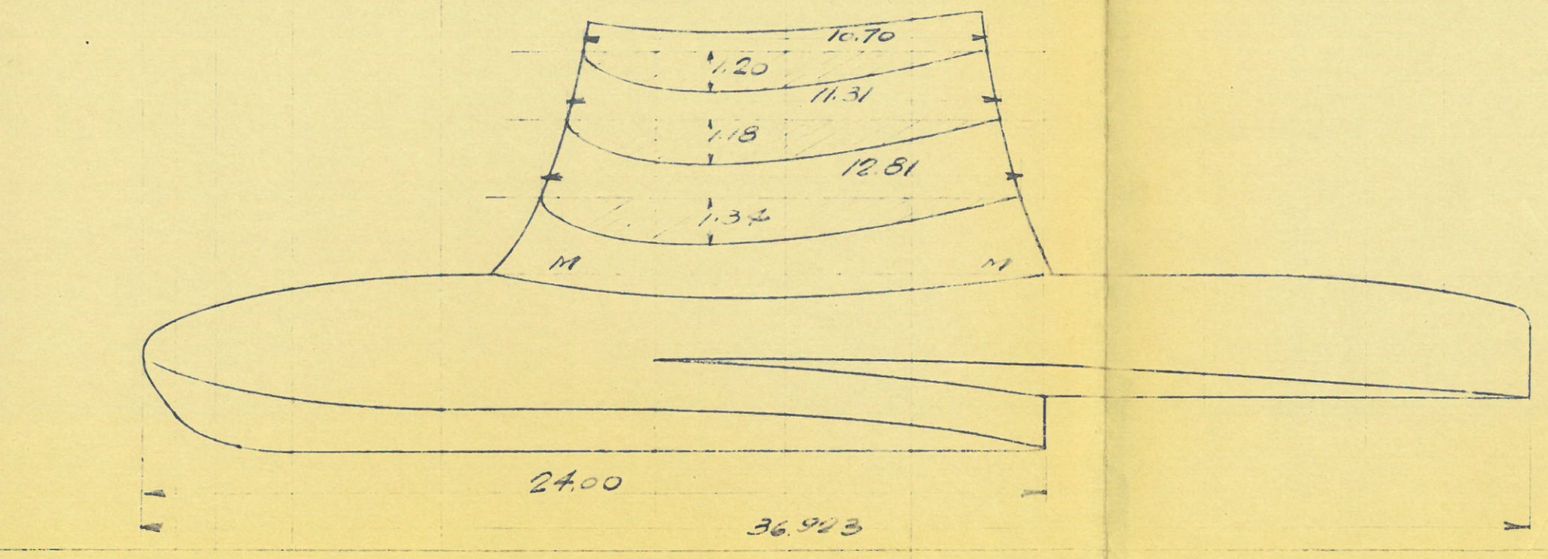
1/8" = 1'0"

SCREEN GRID G TO SIMULATE SLIPSTREAM EFFECTS ON TAIL SURFACES

GALCIT REP 221







FLOAT:

FRONTAL AREA 20.6 SQ IN.
SIDE AREA 151.16 " "

STRUT:

FRONTAL AREA 17.2 SQ IN.
SIDE AREA 83.4 " "

REF:
FLOAT DWG # LB 35.109
STRUT DWG # LB-380.1

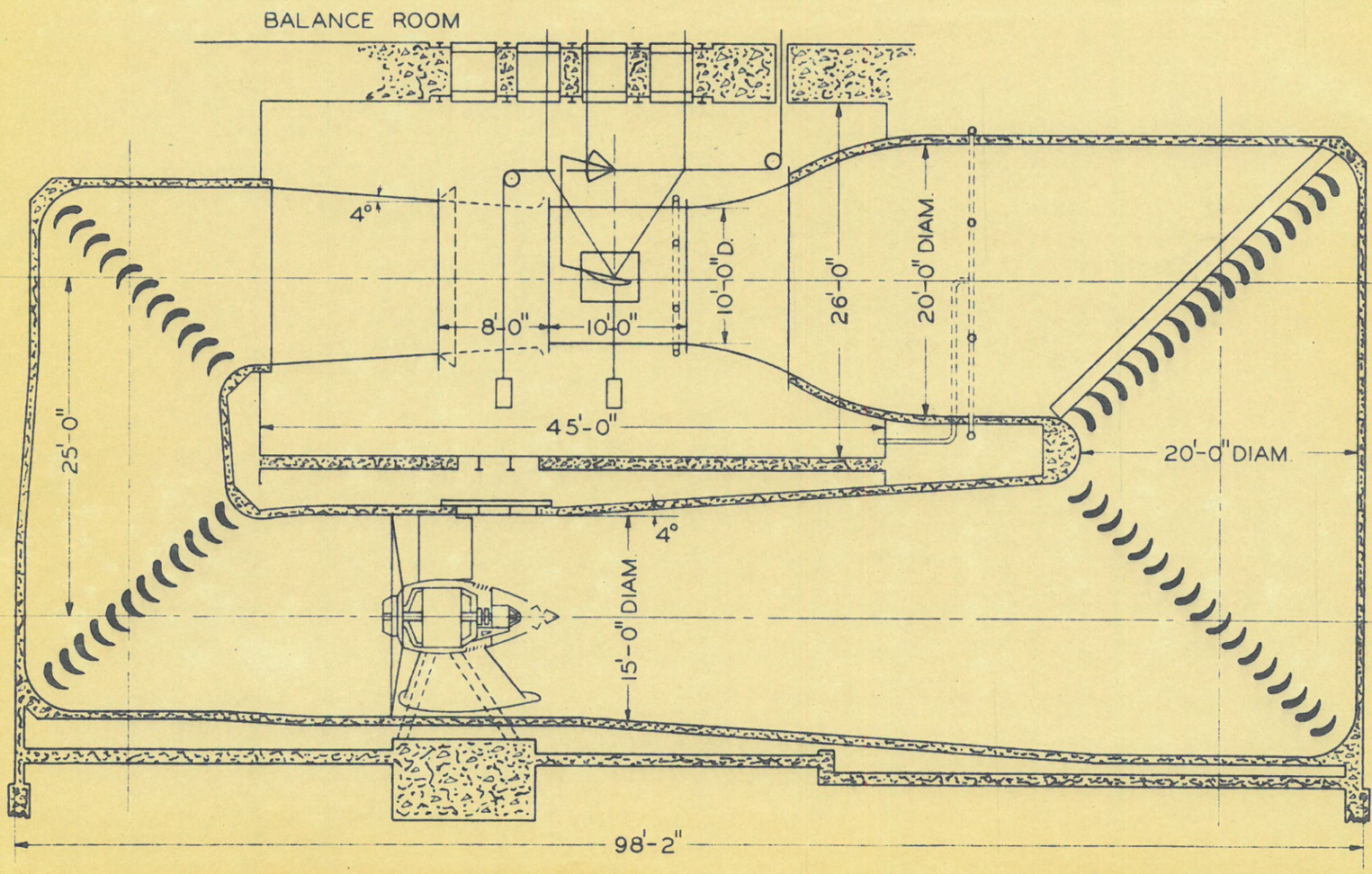
3.259
1.356

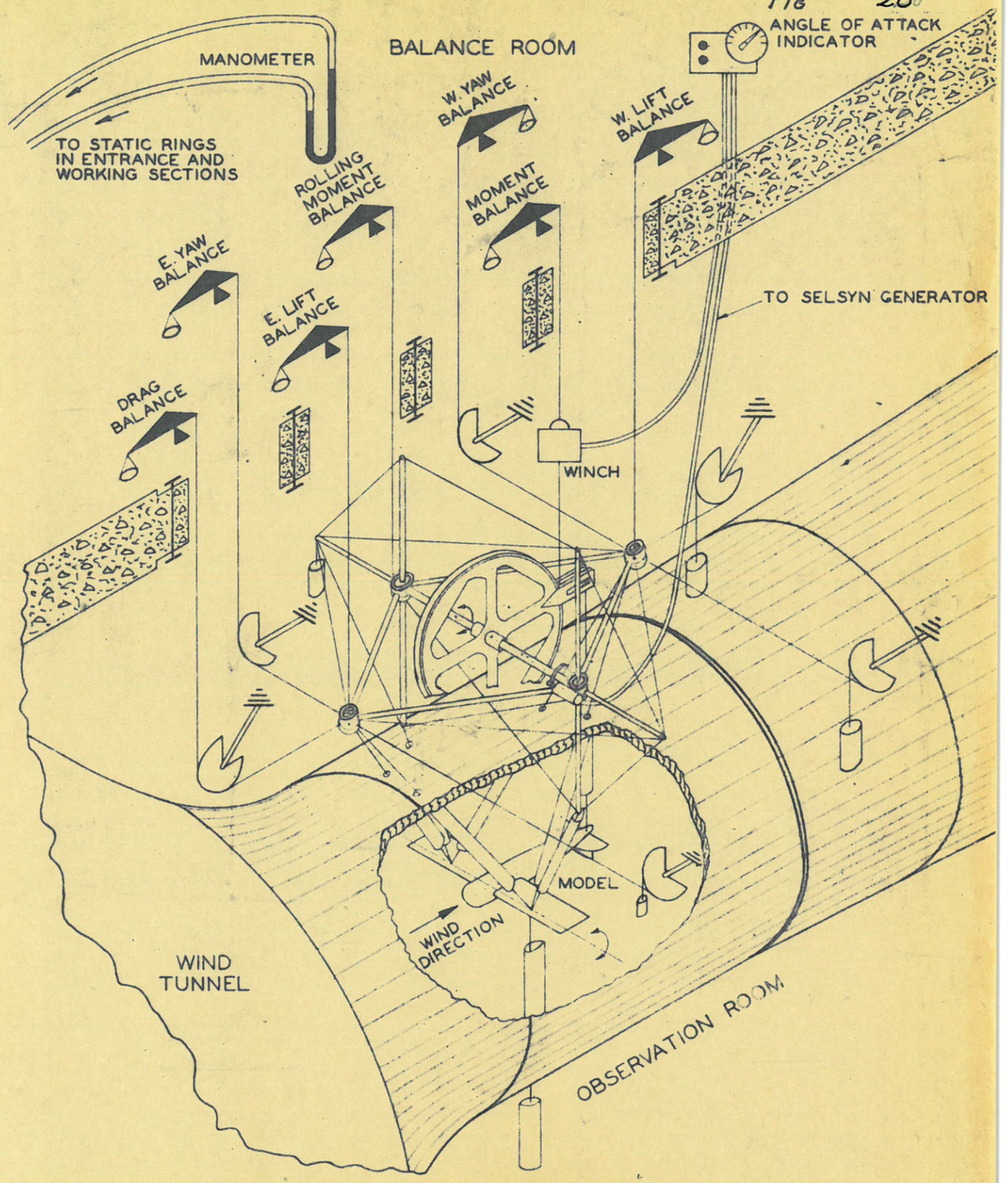
NACA MOD 35
SINGLE FLOAT
9-15-38 1/2" = 1"

W

VERTICAL SECTION THROUGH 10 FT. WIND TUNNEL

GUGGENHEIM AERONAUTICS LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA





SIX COMPONENT SETUP FOR TEN FOOT WIND TUNNEL TESTS
AT GUGGENHEIM AERONAUTICS LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY

FIG.

DWG. WT 26

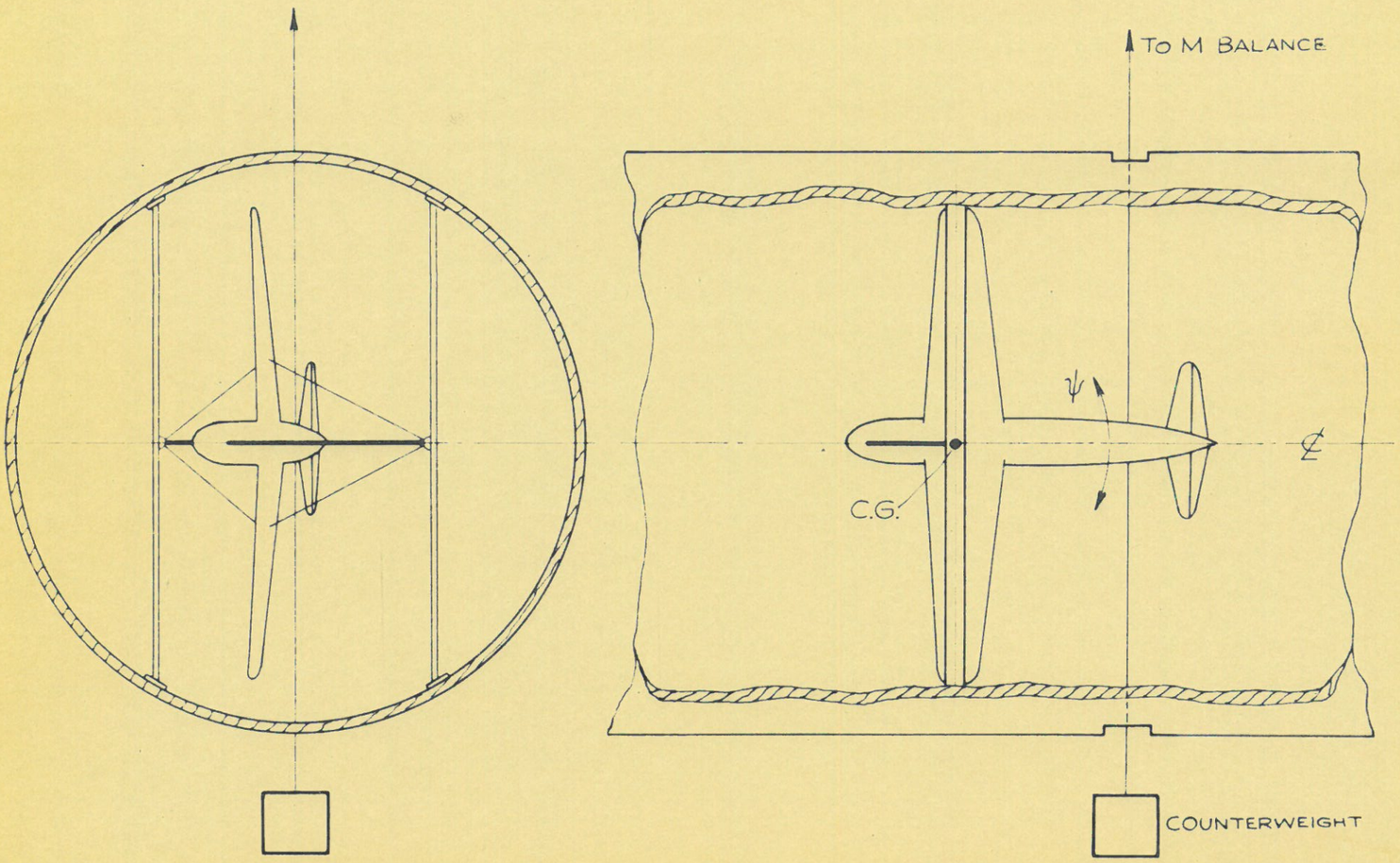


DIAGRAM SHOWING RIGGING FOR YAW-AT-YAW

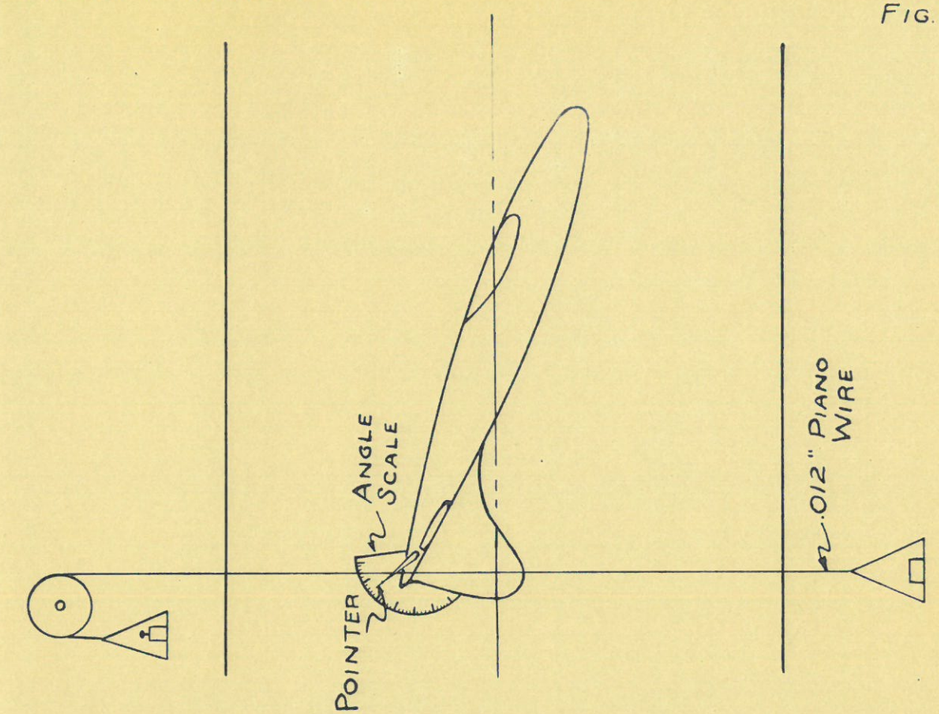
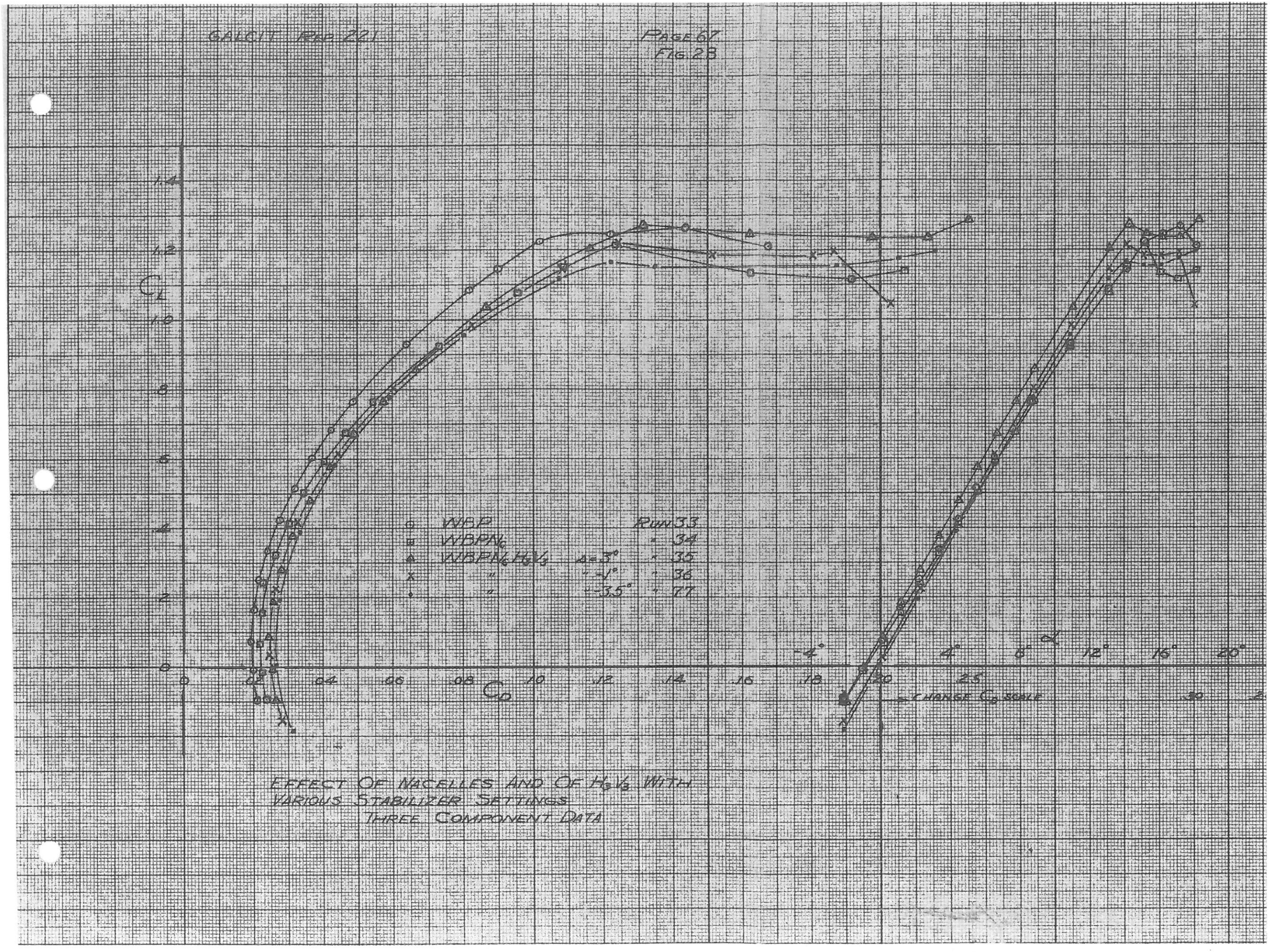
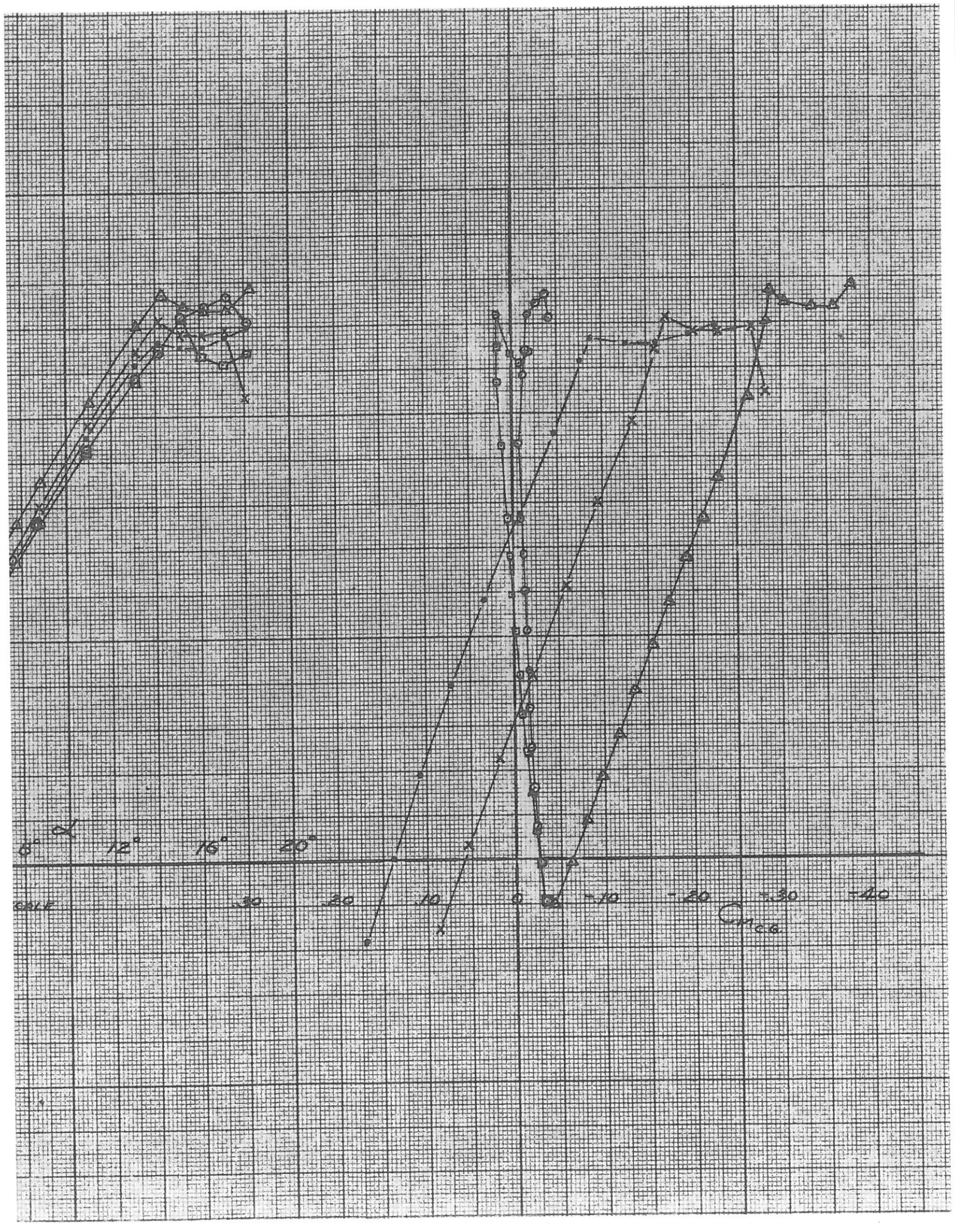
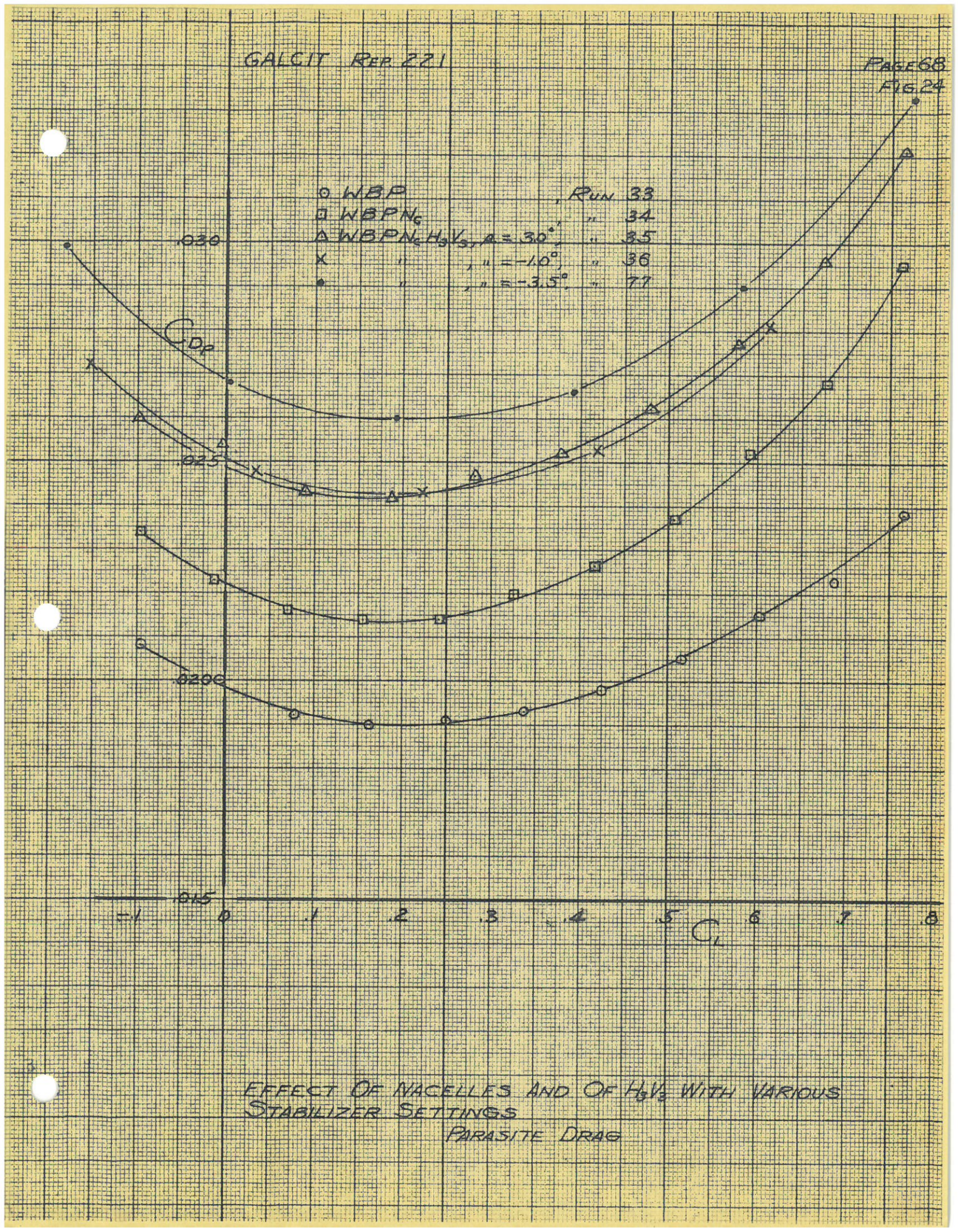


DIAGRAM SHOWING ELEVATOR HINGE MOMENT SETUP



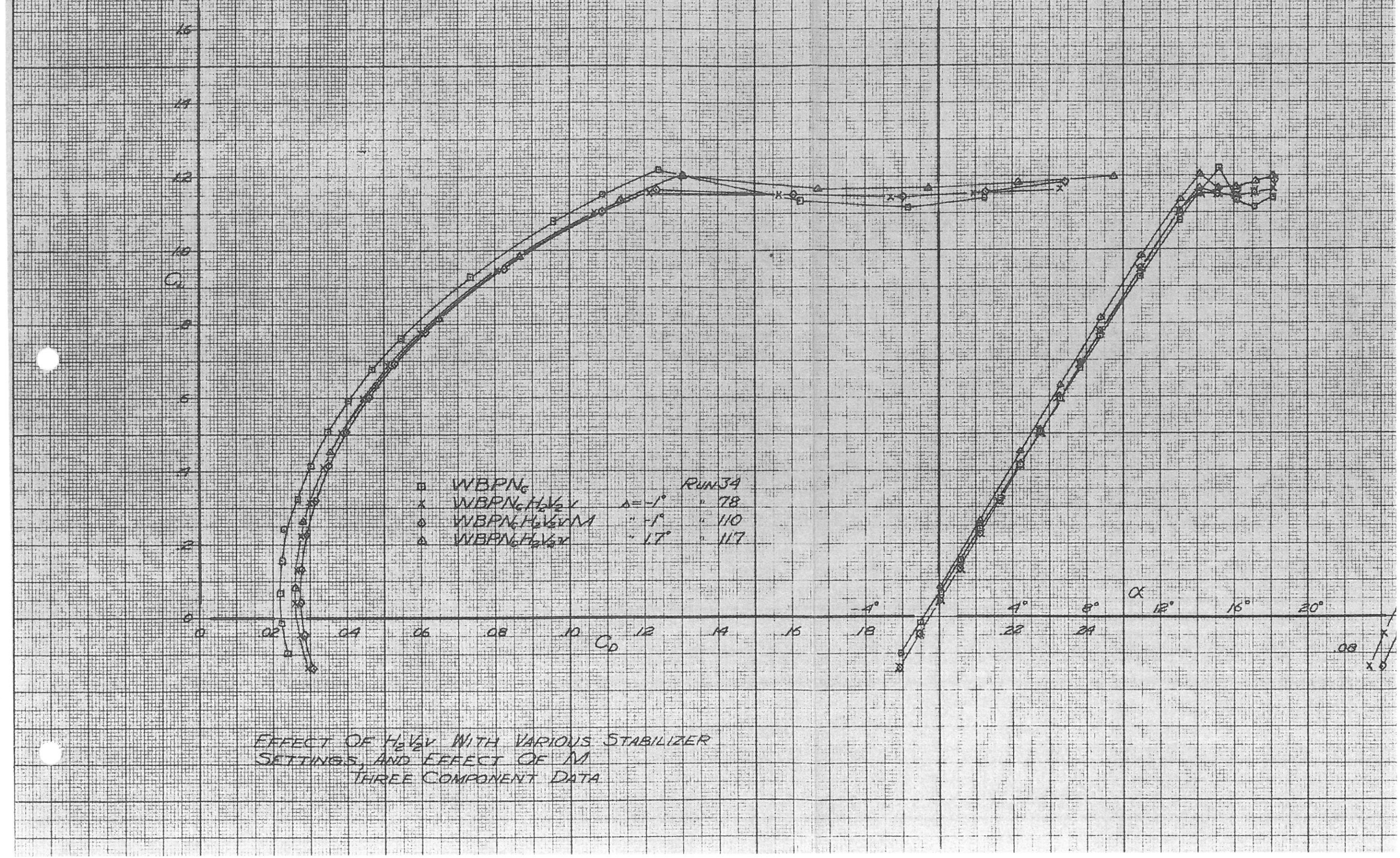
EFFECT OF NACELLES AND OF H_6V_3 WITH VARIOUS STABILIZER SETTINGS
THREE COMPONENT DATA


8°
12°
16°
20°
-30
-20
-10
0
-10
-20
-30
-40

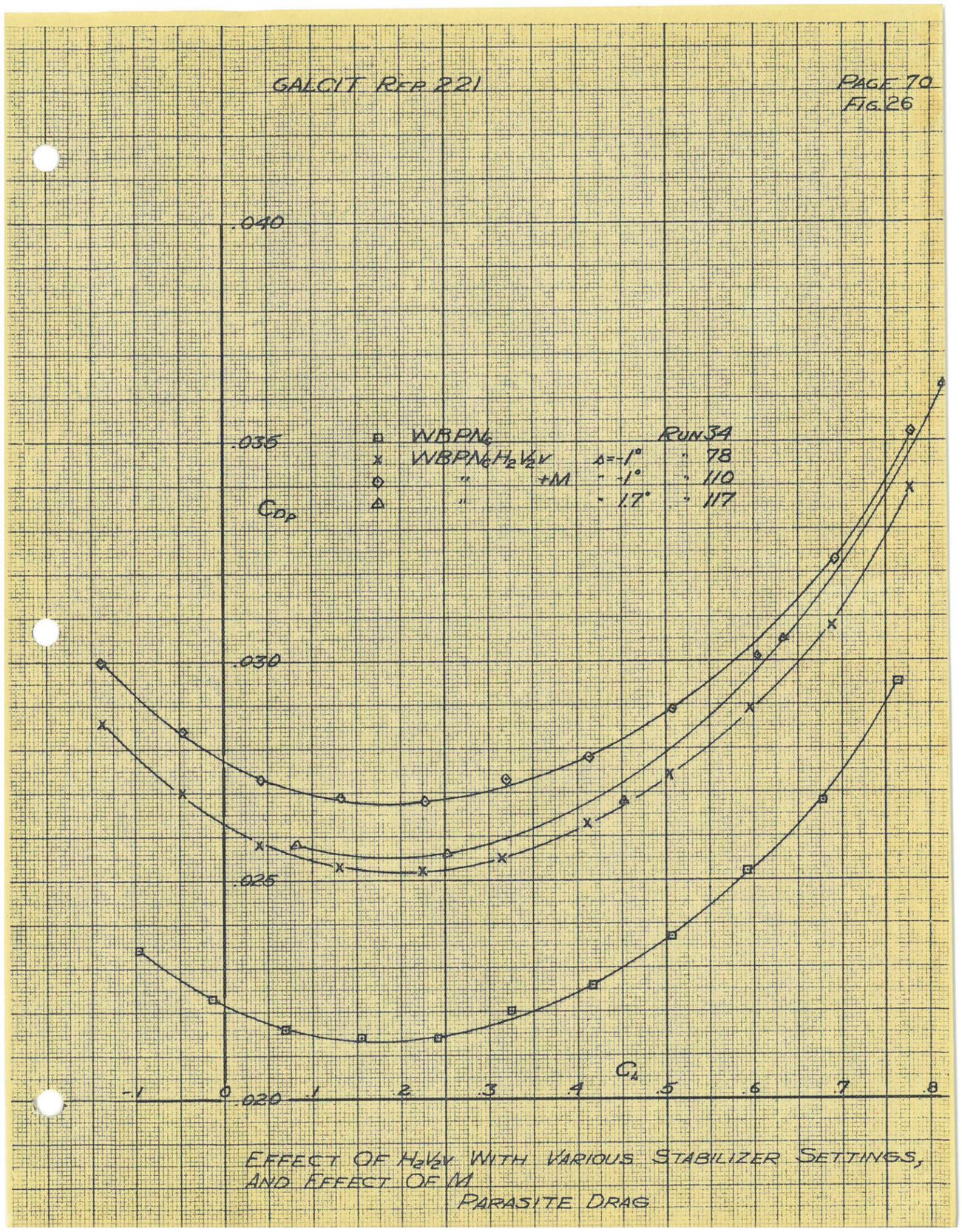


EFFECT OF NACELLES AND OF H_3V_3 WITH VARIOUS STABILIZER SETTINGS

PARASITE DRAG

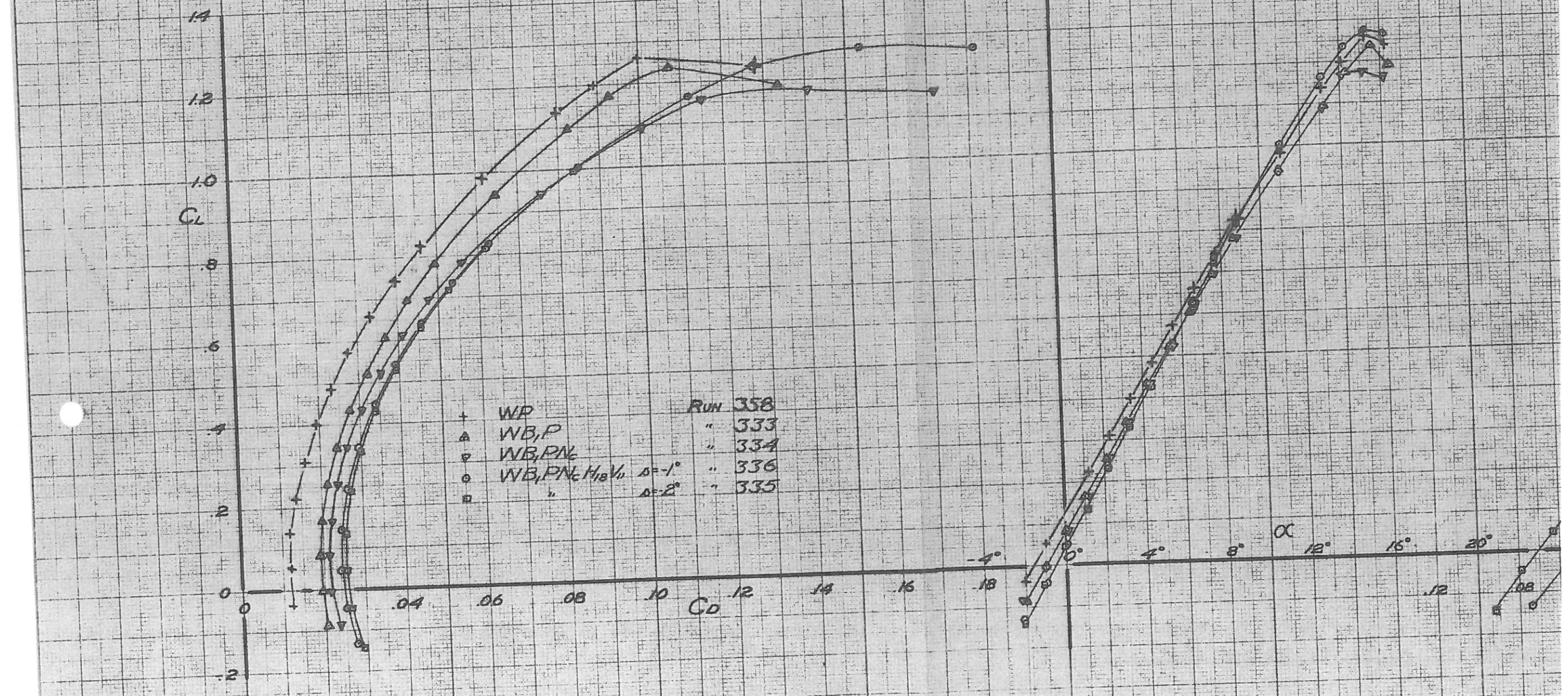


EFFECT OF H_2V_2V WITH VARIOUS STABILIZER SETTINGS, AND EFFECT OF M
THREE COMPONENT DATA



EFFECT OF H_2V_{2V} WITH VARIOUS STABILIZER SETTINGS, AND EFFECT OF M

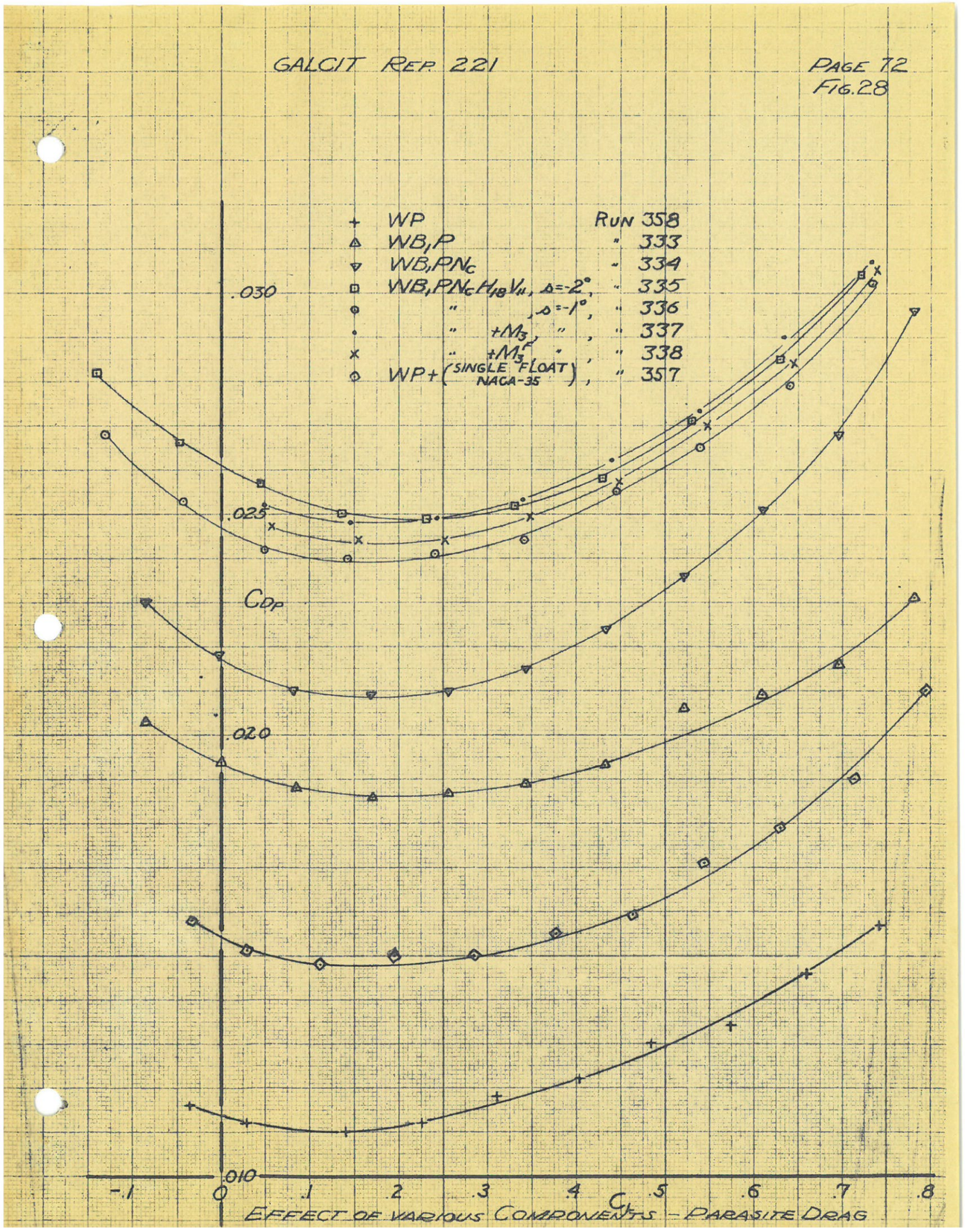
PARASITE DRAG



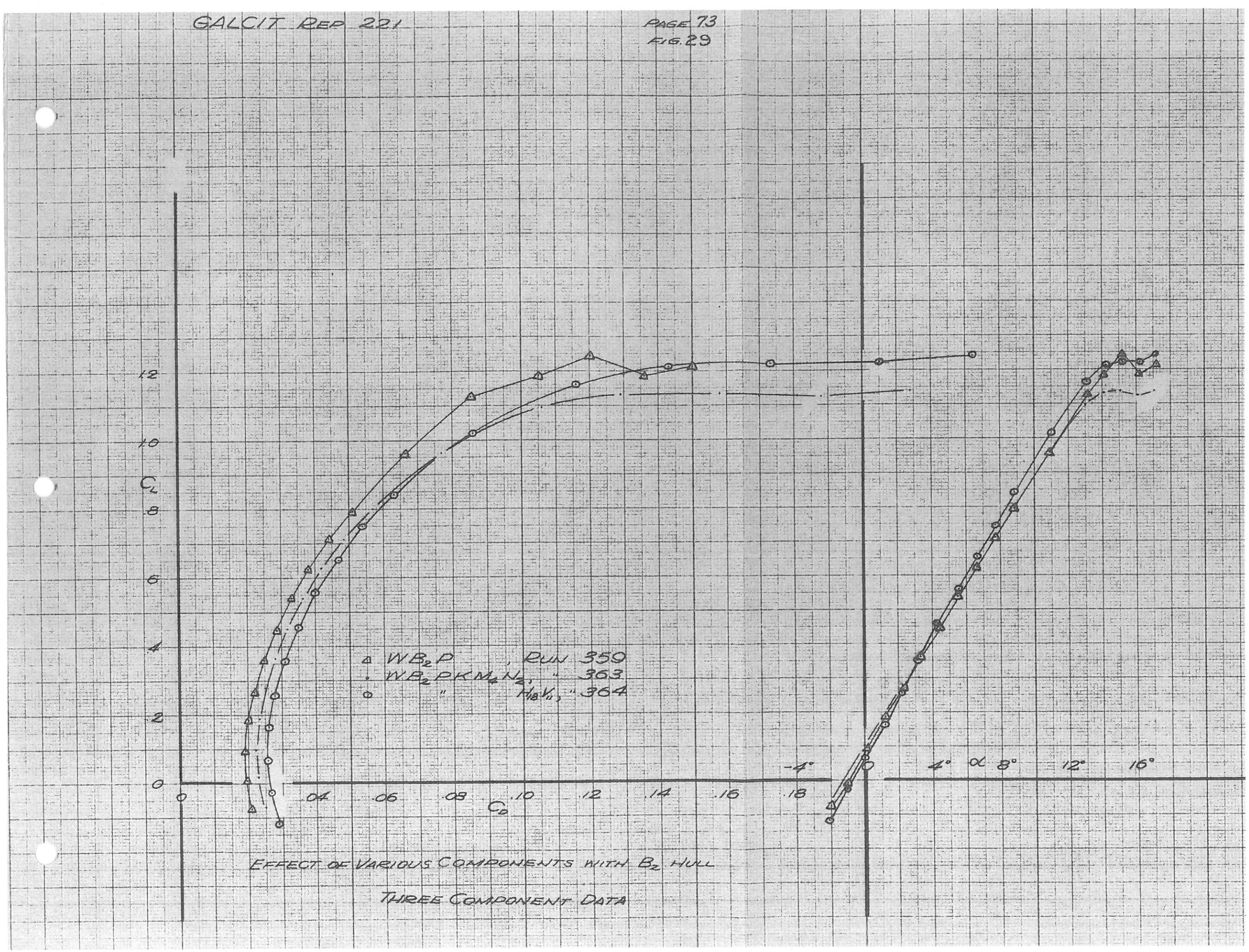
EFFECT OF HULL B_1, NACELLES AND $H_{18}V_{11}$
WITH VARIOUS STABILIZER SETTINGS

THREE COMPONENT DATA

12°
16°
20°
.12
.08
.04
0
-.08
-.12
-.16
-.20
$C_{M_{C/4}}$
PRINTED IN U.S.A.

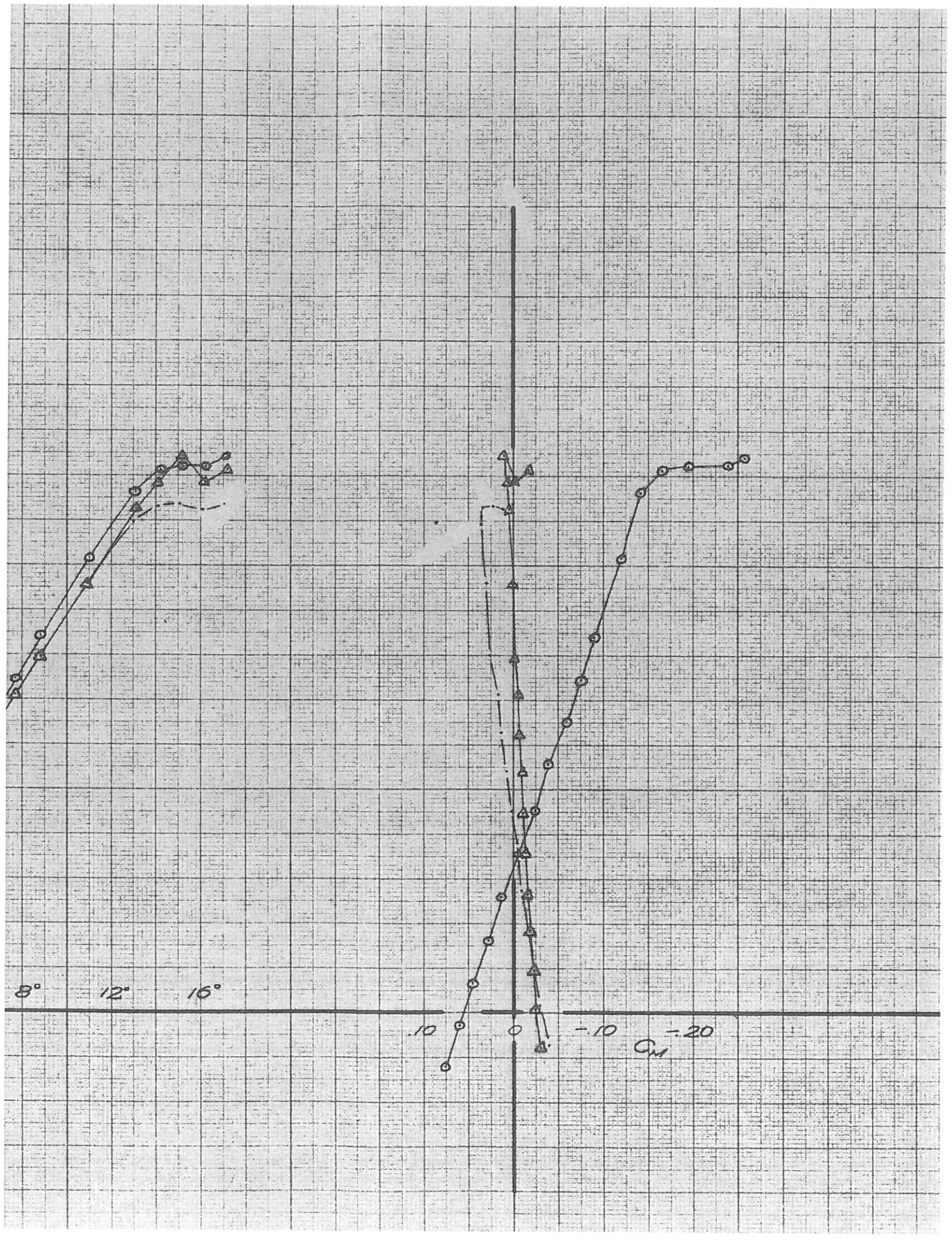


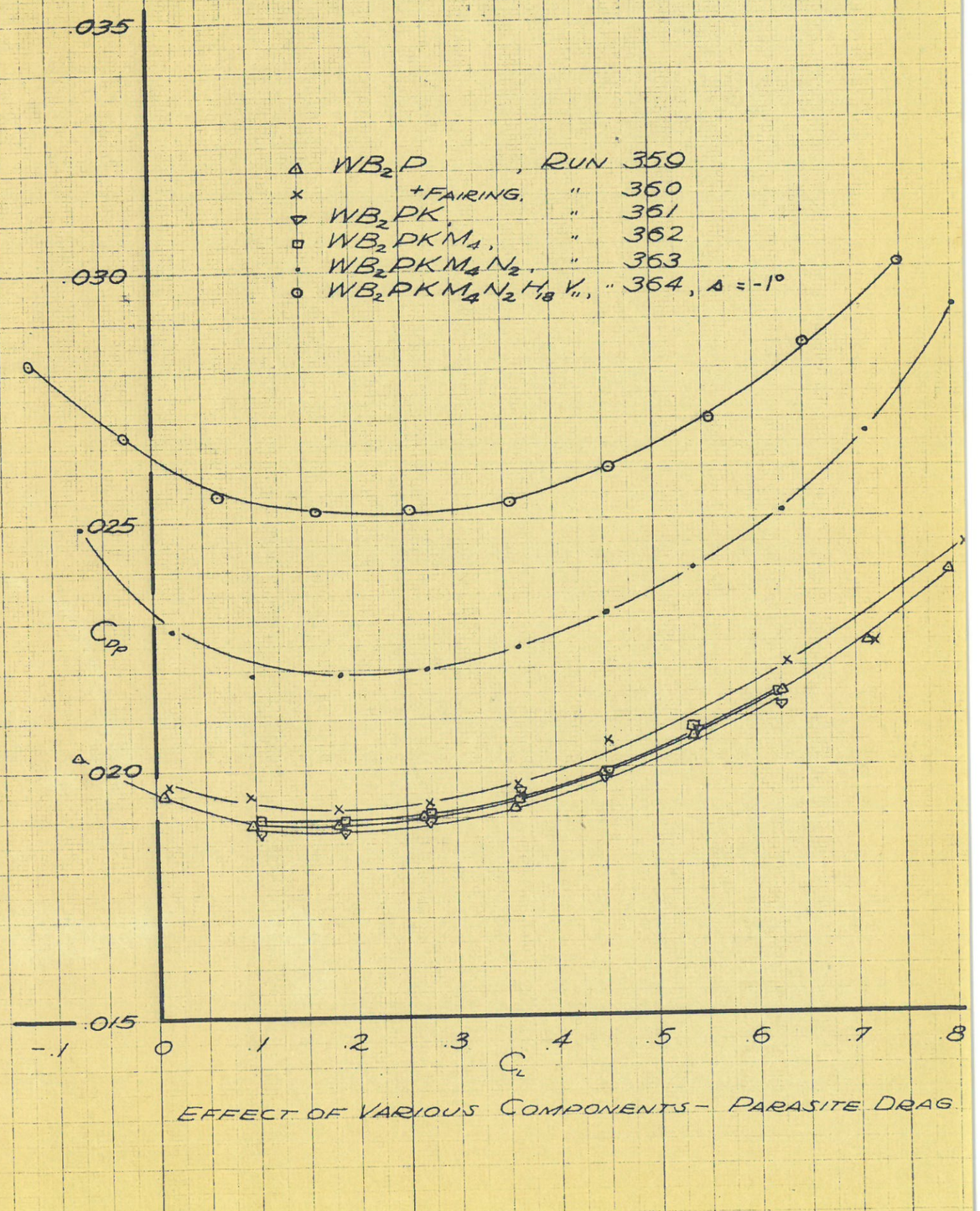
EFFECT OF VARIOUS COMPONENTS – PARASITE DRAG



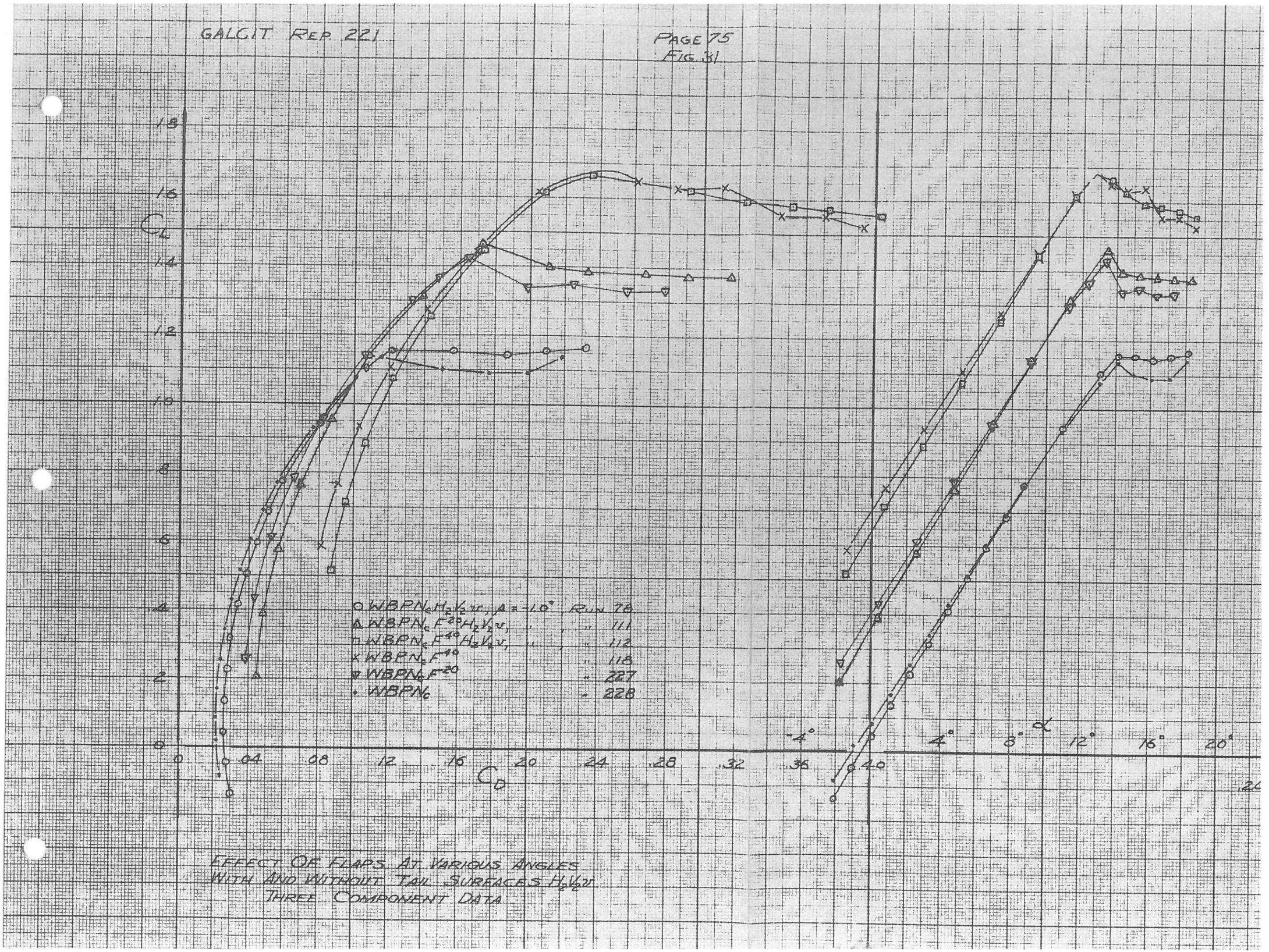
EFFECT OF VARIOUS COMPONENTS WITH B_2 HULL

THREE COMPONENT DATA

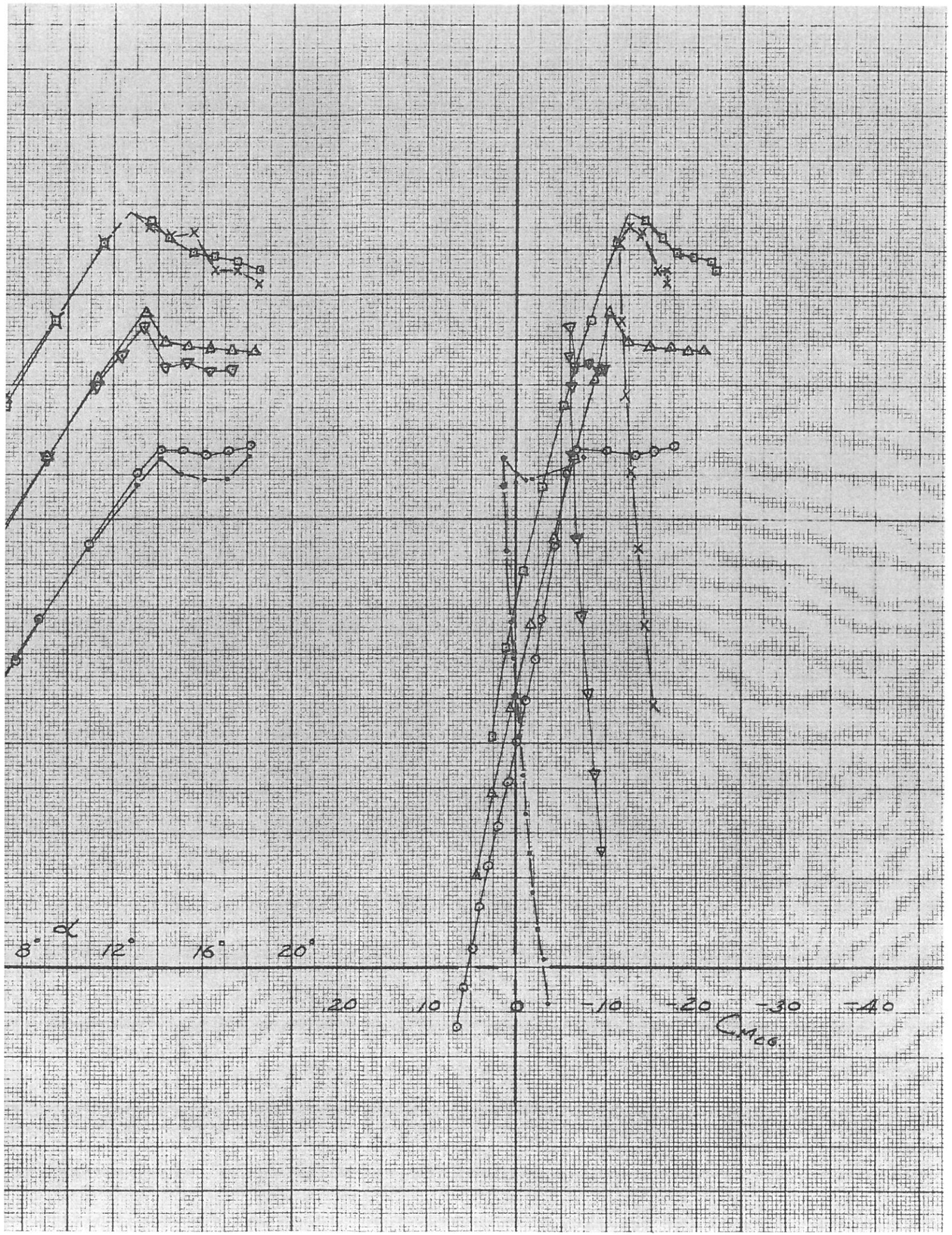

8°
12°
16°
.10
0
-.10
-.20
$C_{L,1}$

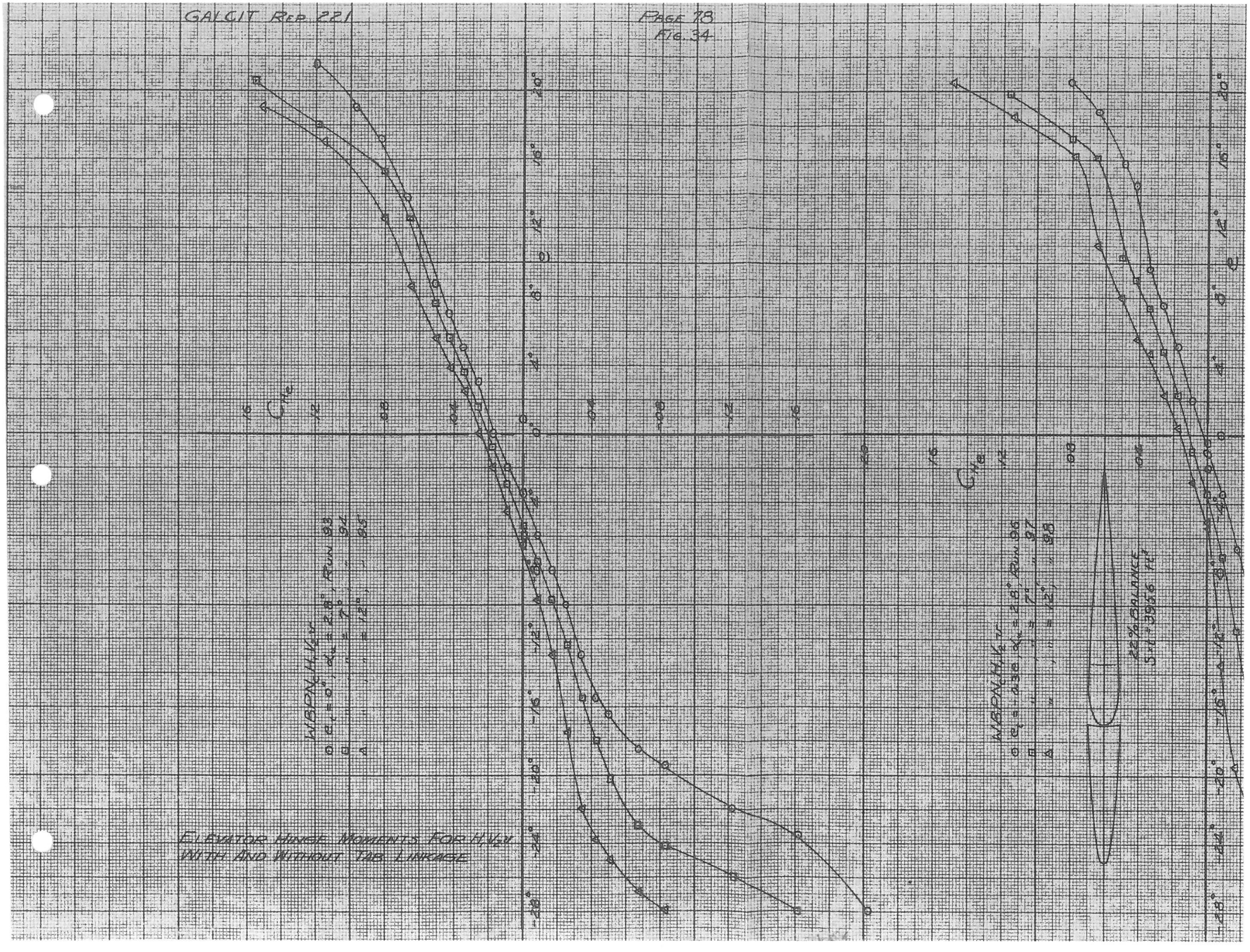


EFFECT OF VARIOUS COMPONENTS - PARASITE DRAG

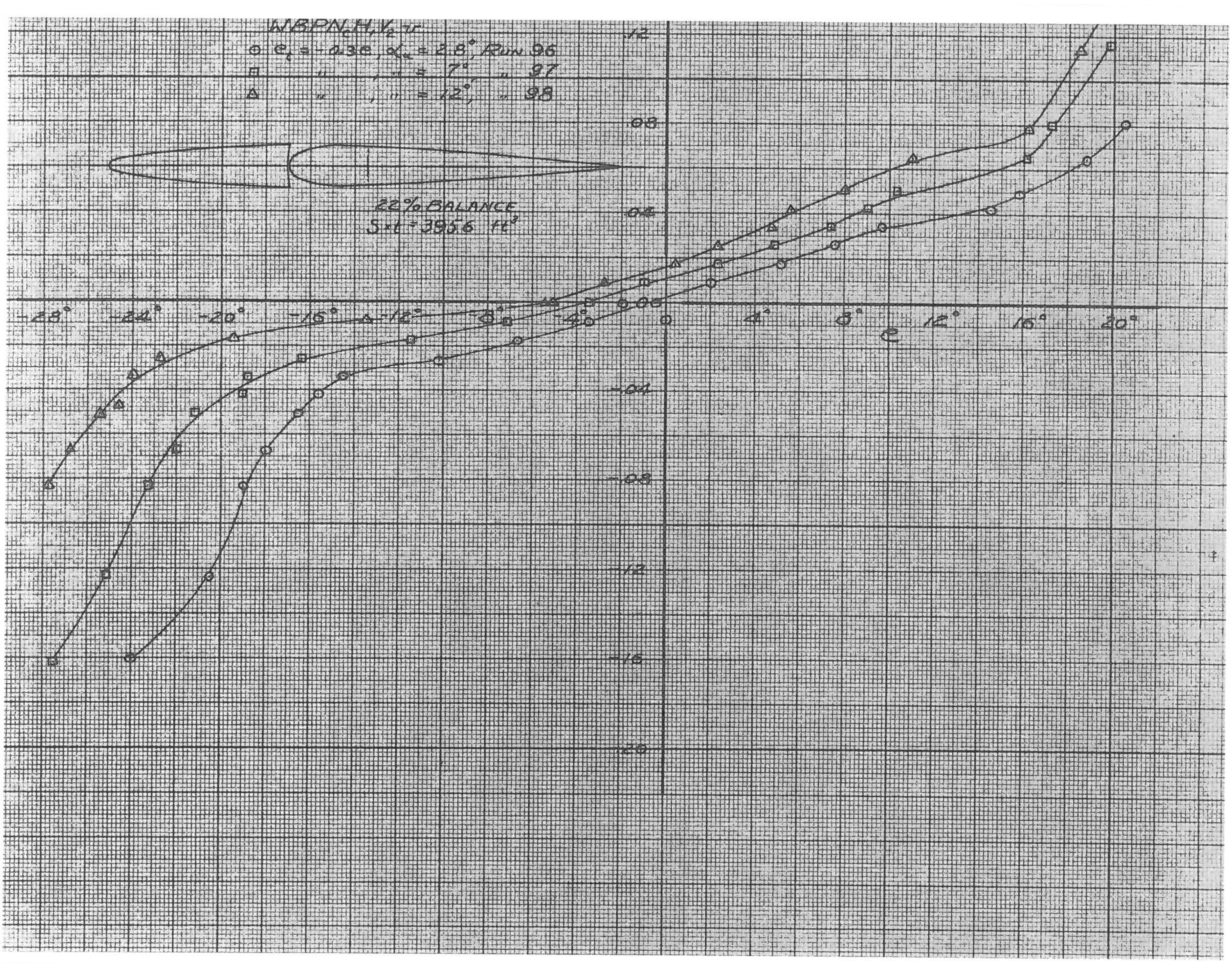


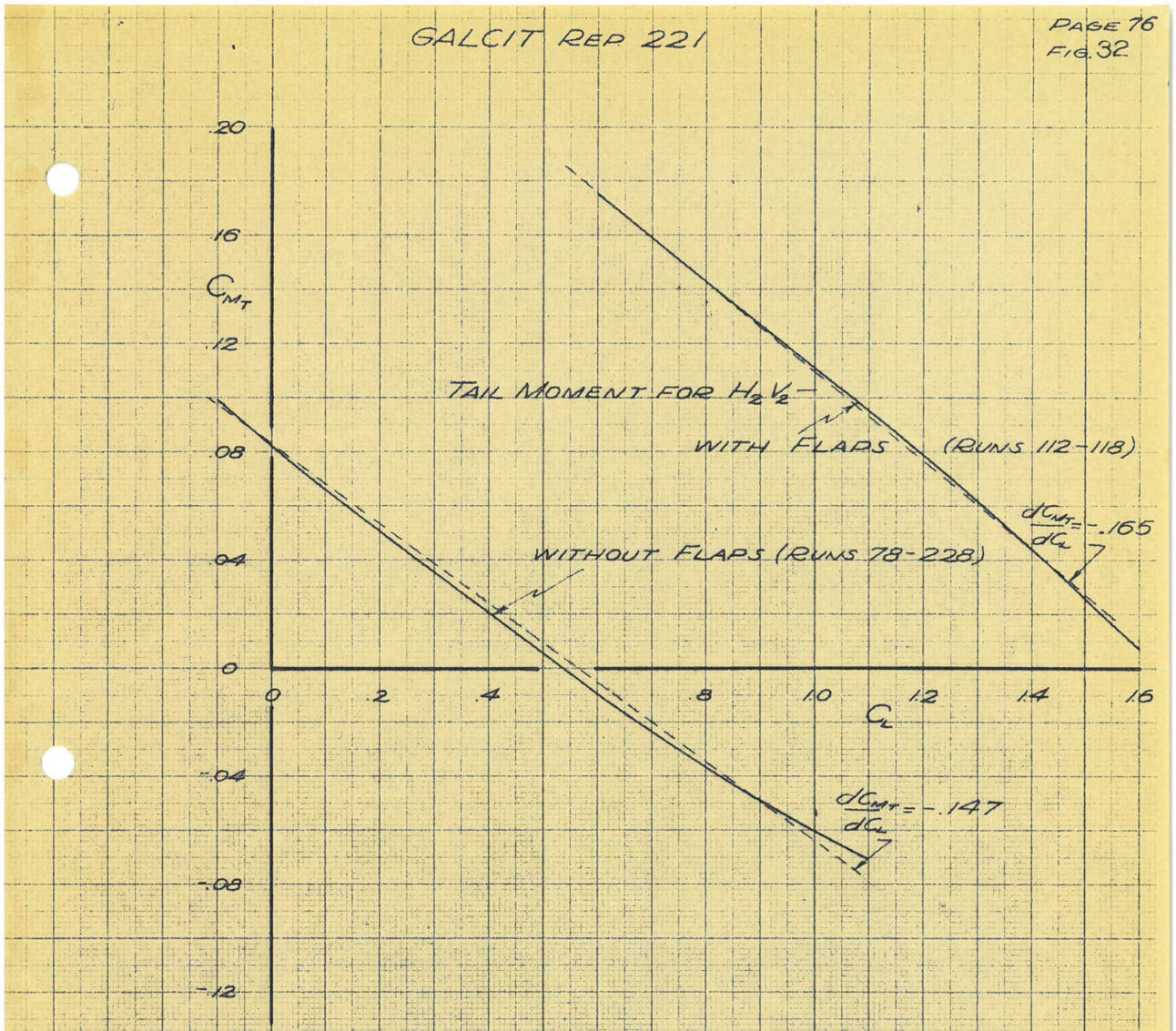
EFFECT OF FLAPS AT VARIOUS ANGLES WITH AND WITHOUT TAIL SURFACES H_2V_2
THREE COMPONENT DATA


8°
α
12°
16°
20°
20
10
0
-10
-20
-30
-40
$C_{M_{c/4}}$

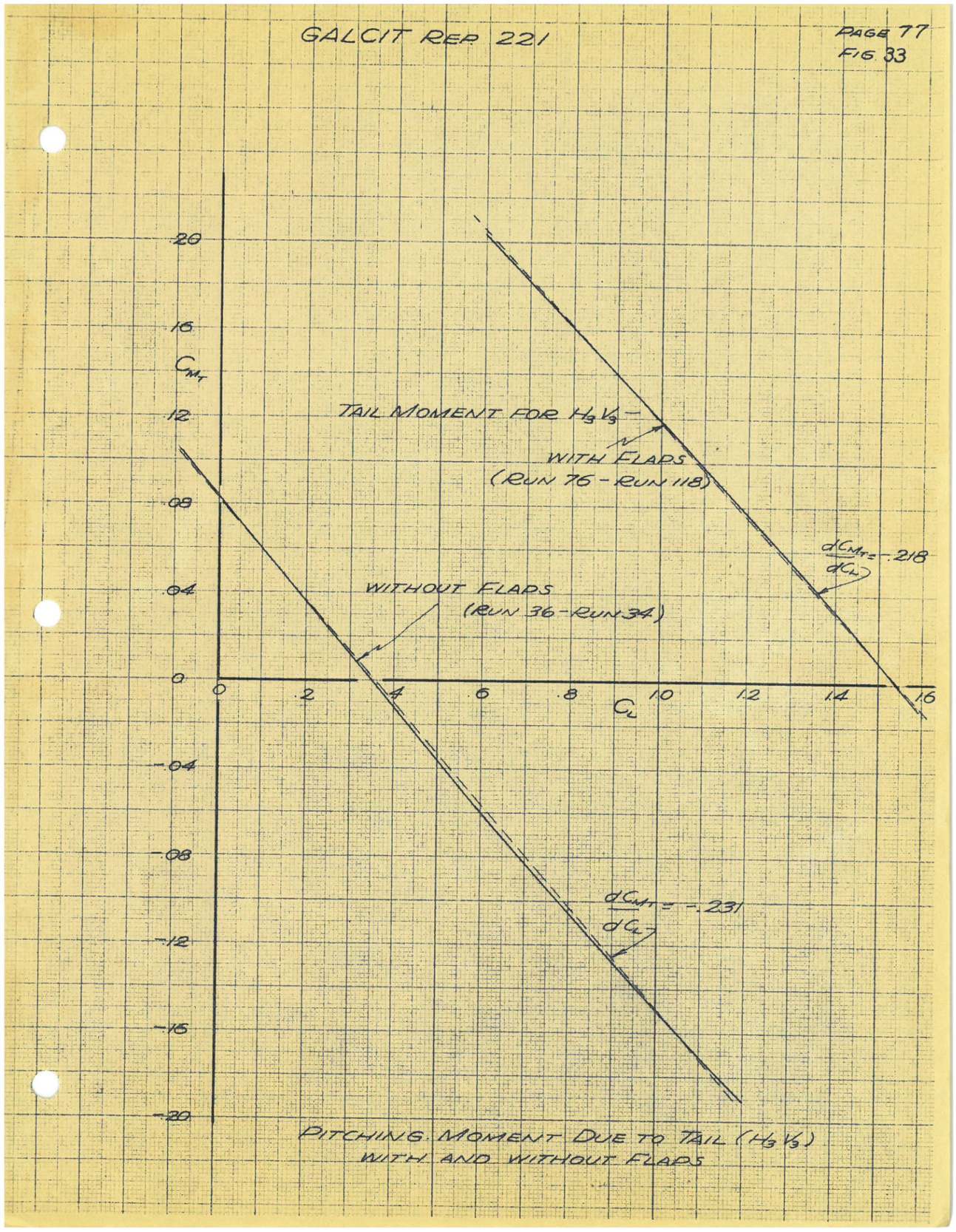


Elevator Hinge Moments for H1/2 With And Without Tab Linkage

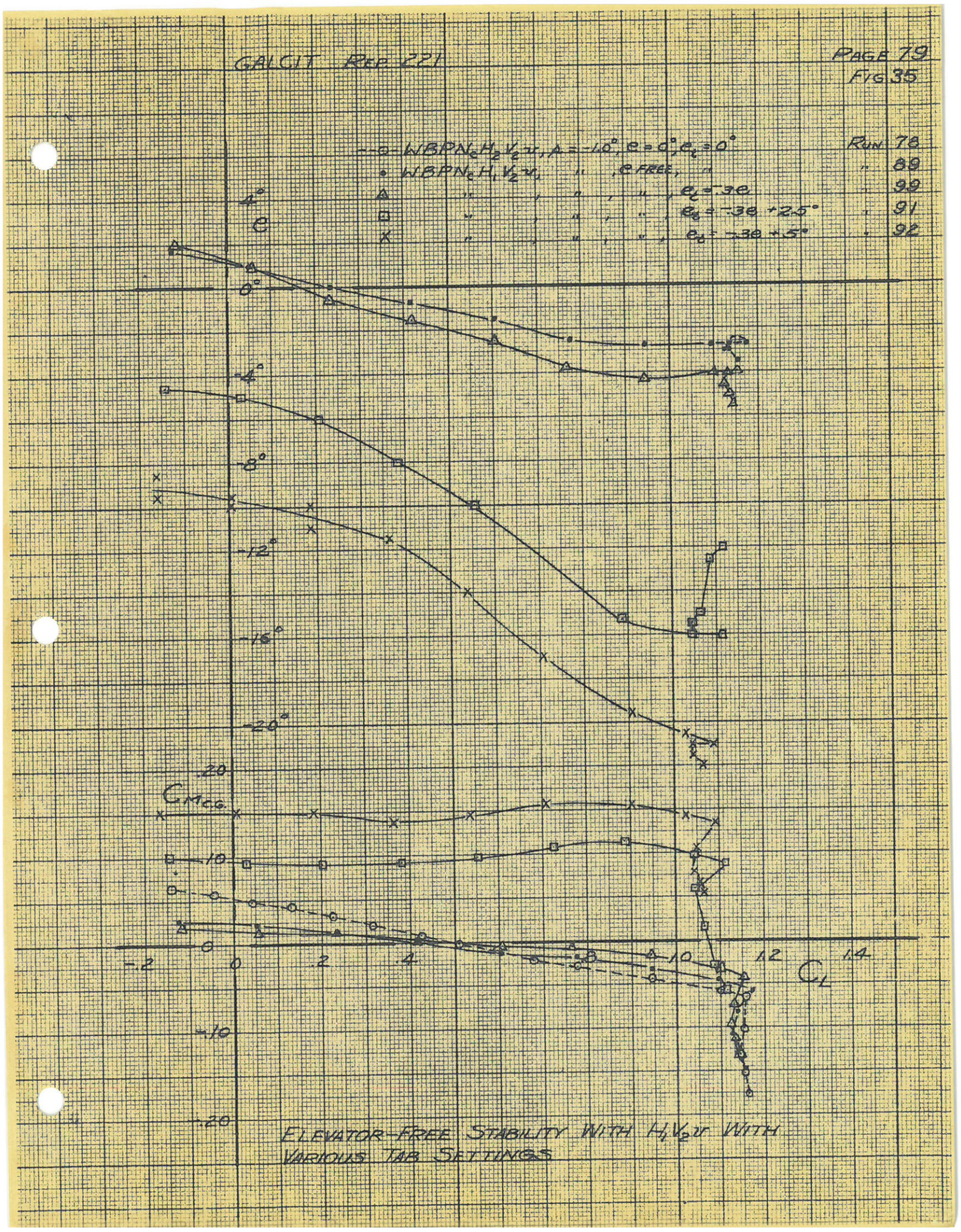

WBPN$_c$H,V$_2$T
○ e_t = -0.3e, α_w = 2.8° Run 96
□ " , " = 7° " 97
△ " , " = 12° " 98
22% BALANCE
S_{et} = 39.56 ft²
.12
.08
.04
0
-.04
-.08
-.12
-.16
-.20
-28°
-24°
-20°
-16°
-12°
-8°
-4°
4°
8°
12°
16°
20°
e



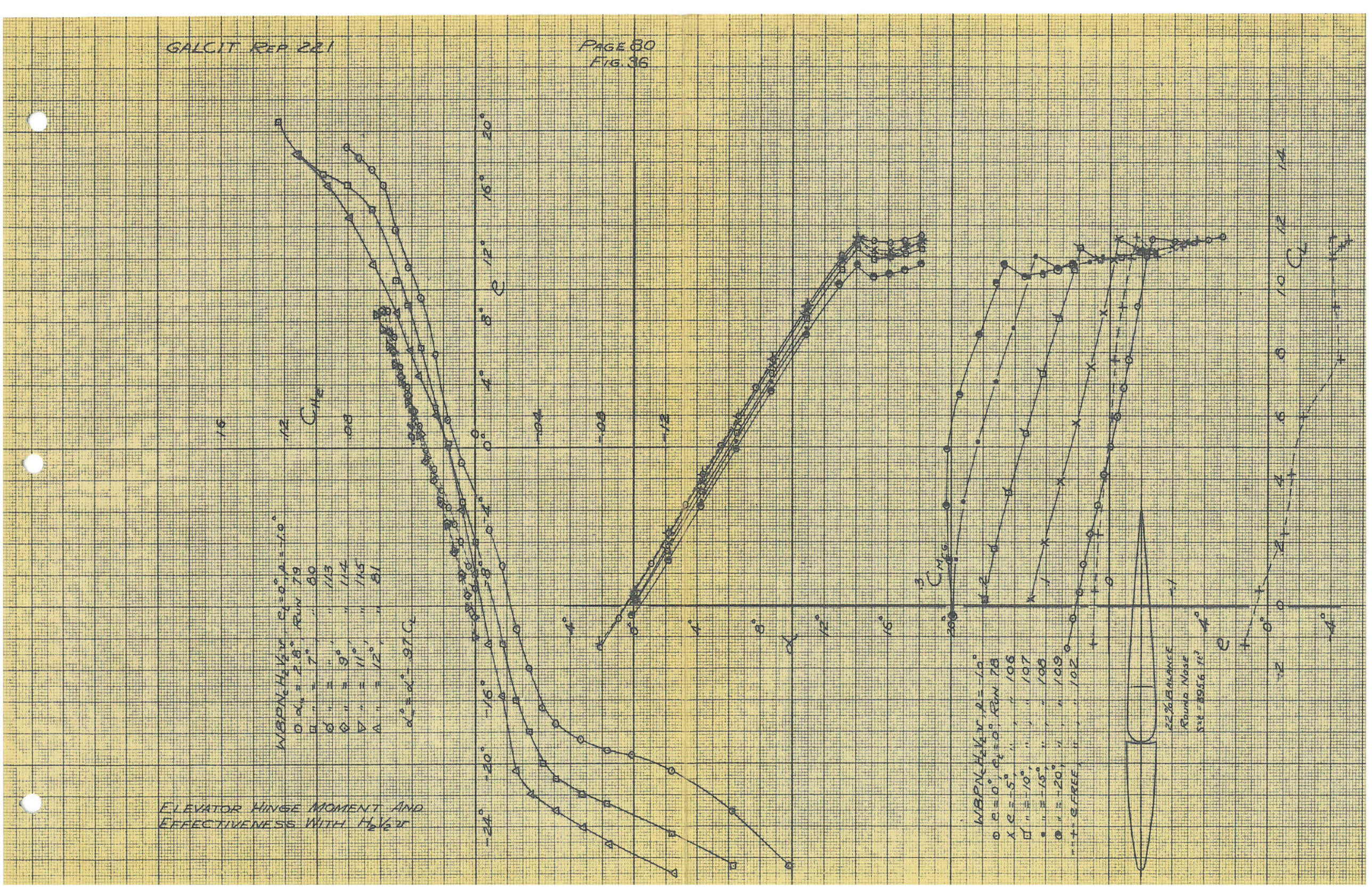
PITCHING MOMENT DUE TO TAIL (H_2V_2)
WITH AND WITHOUT FLAPS



PITCHING MOMENT DUE TO TAIL ($H_3 V_3$)
WITH AND WITHOUT FLAPS

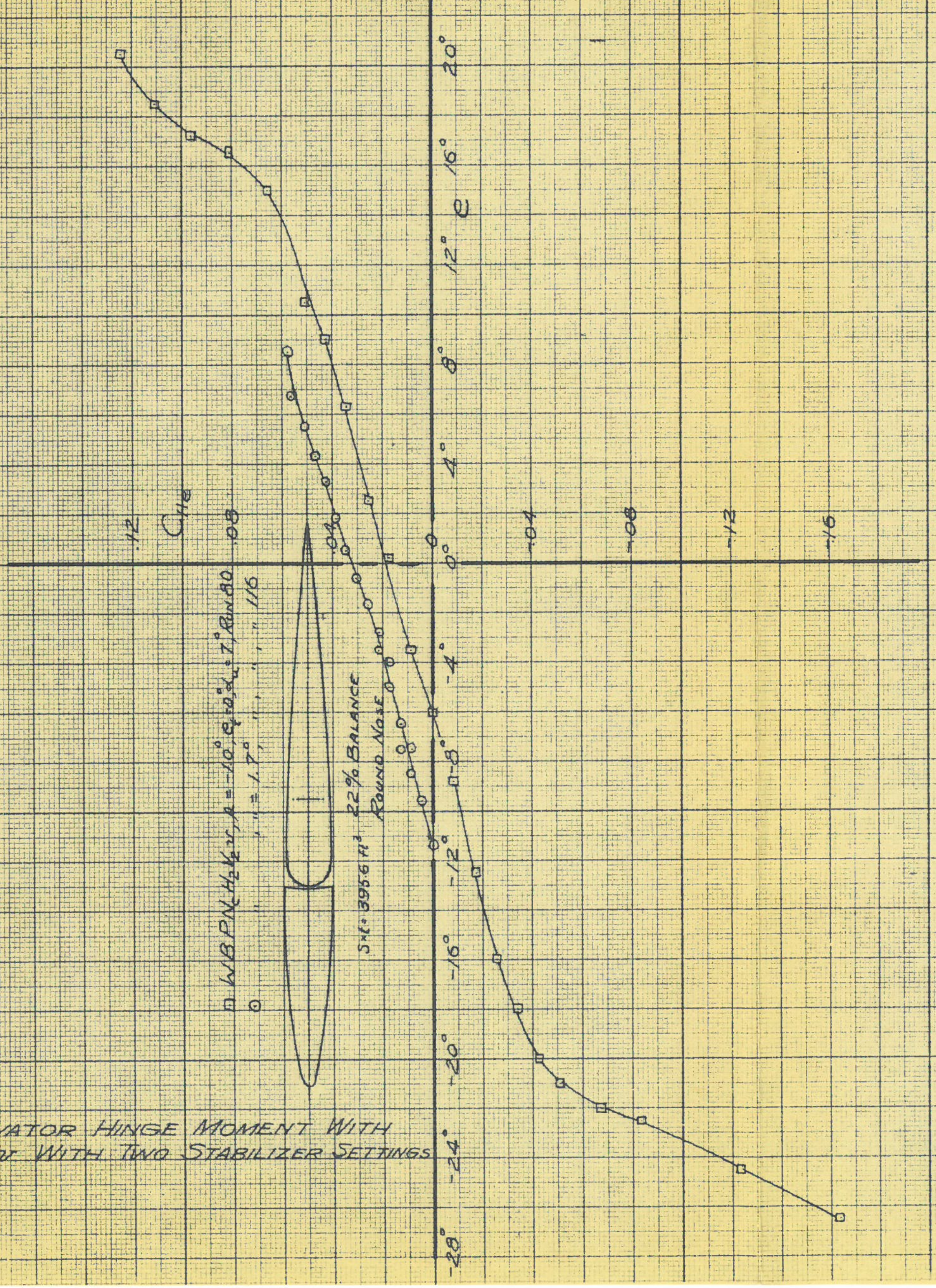


ELEVATOR-FREE STABILITY WITH $H_1V_2\tau$ WITH VARIOUS TAB SETTINGS

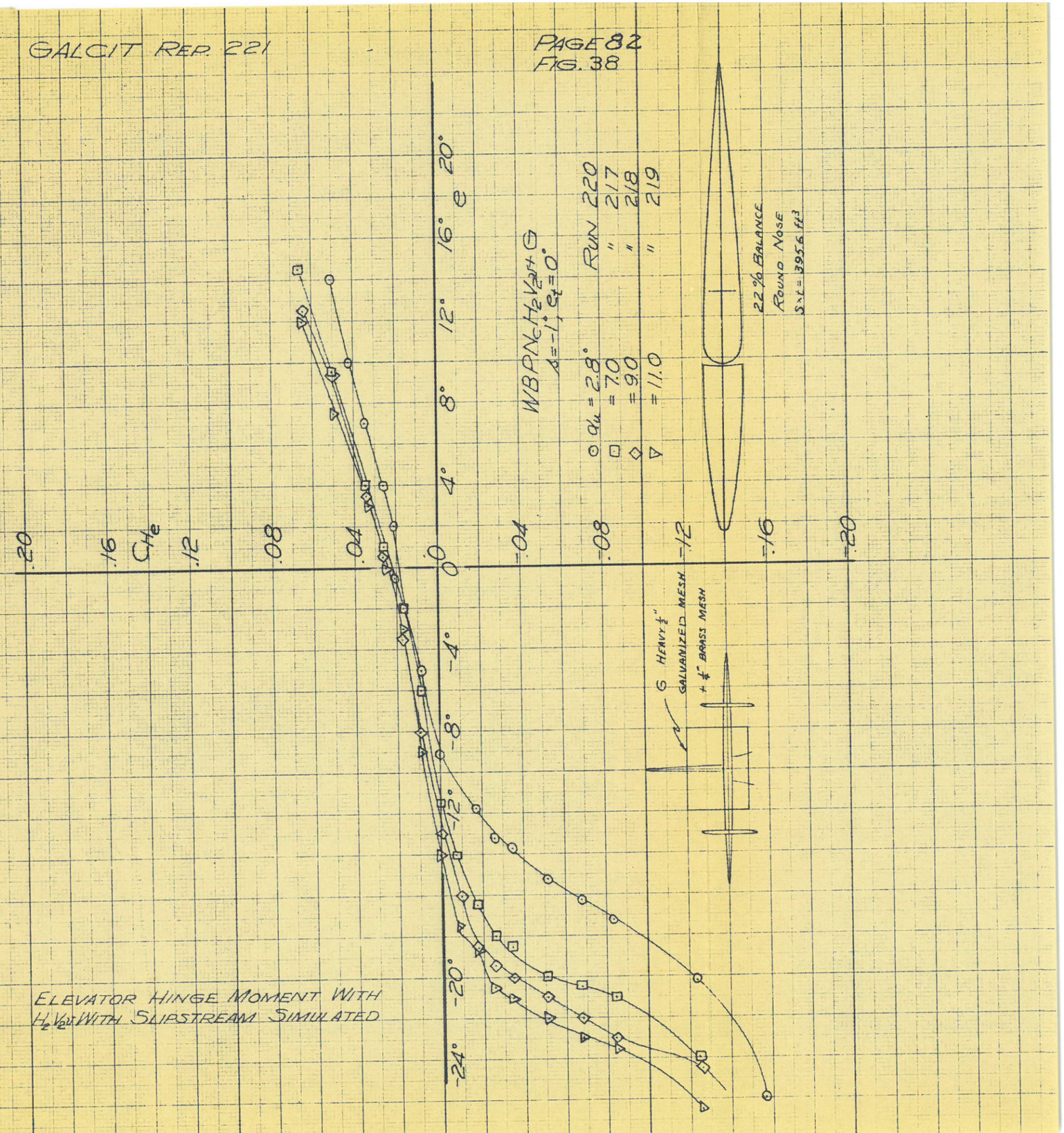


ELEVATOR HINGE MOMENT AND EFFECTIVENESS WITH H_2 ½ TR

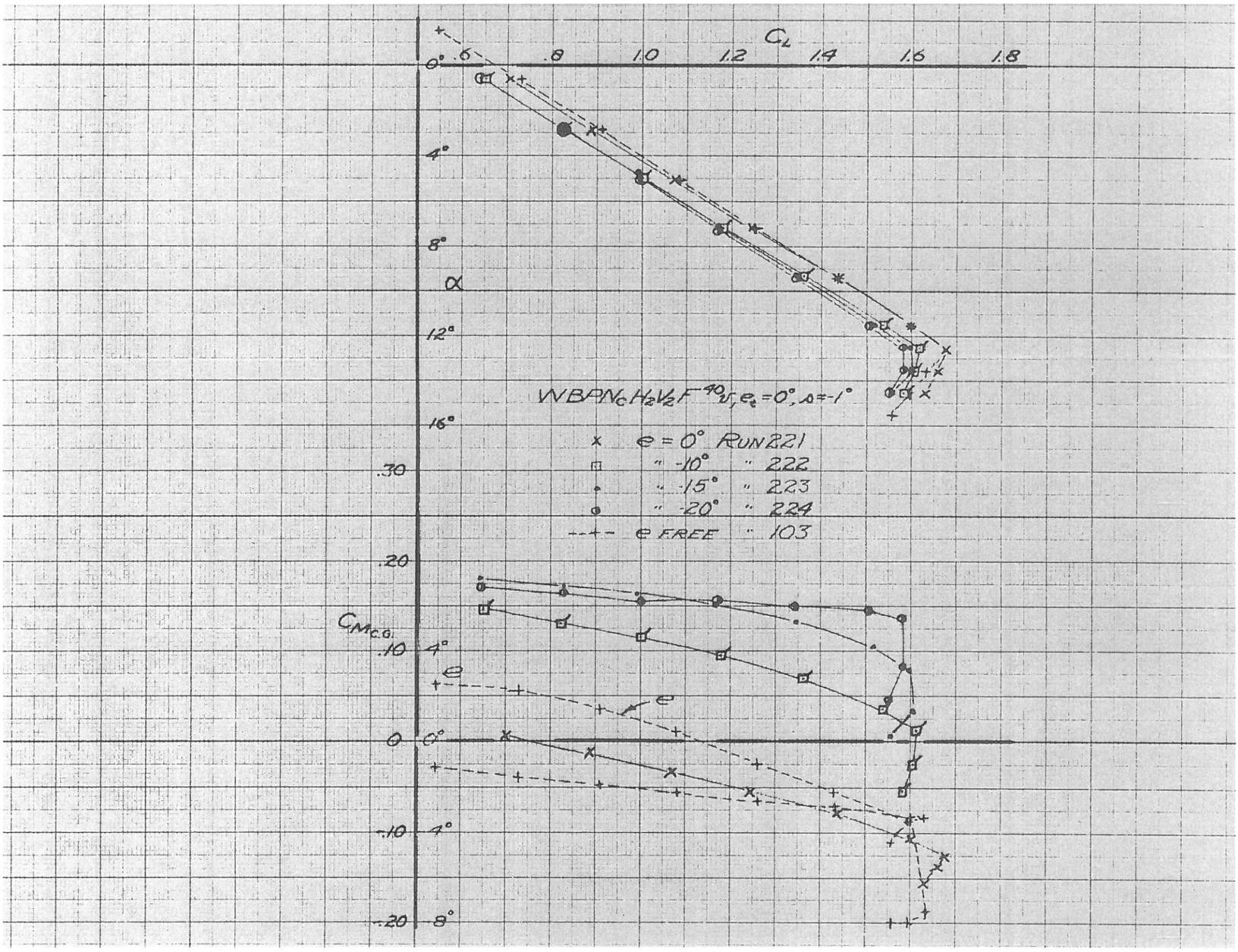
FIG. 37

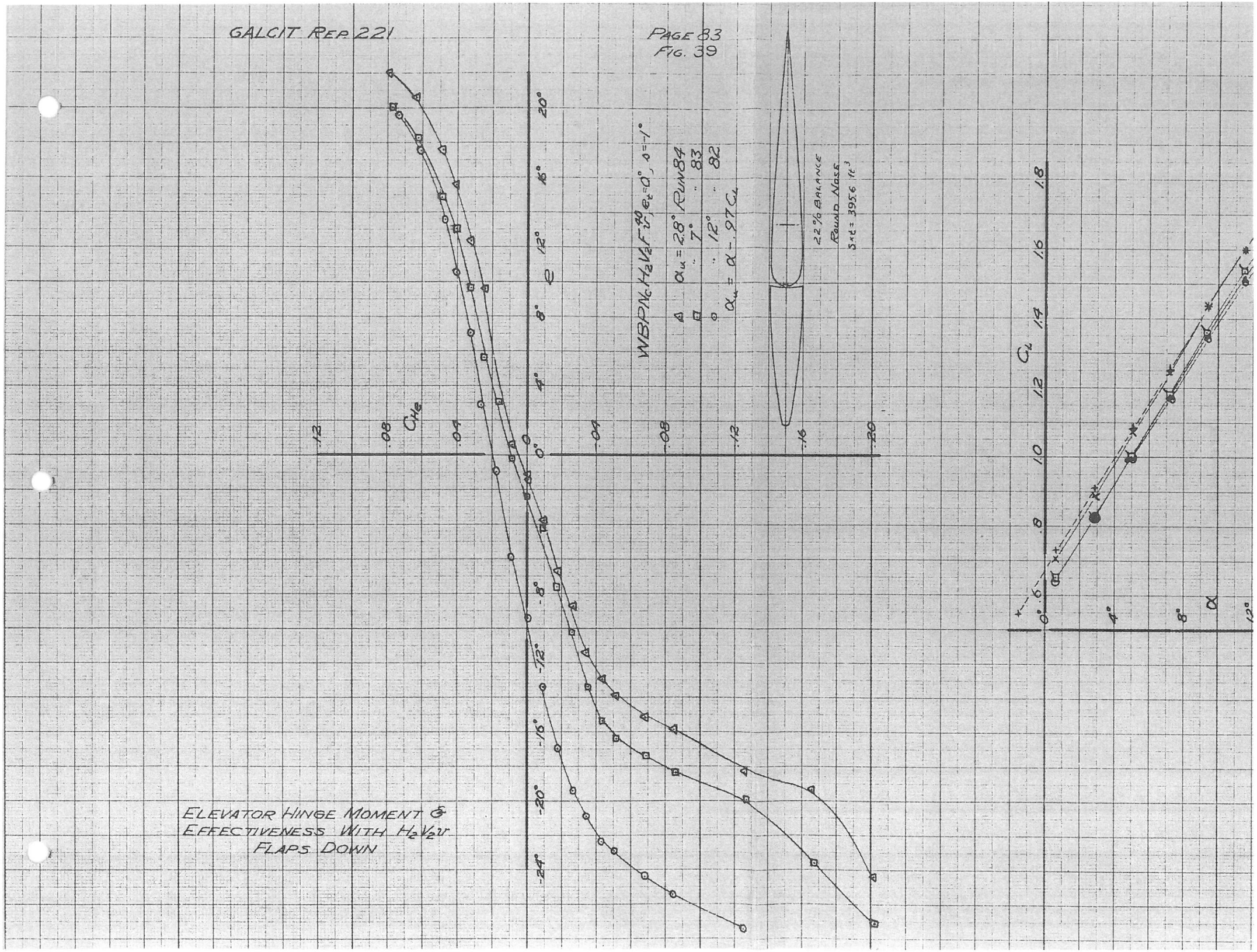


ELEVATOR HINGE MOMENT WITH H_2V_2T WITH TWO STABILIZER SETTINGS

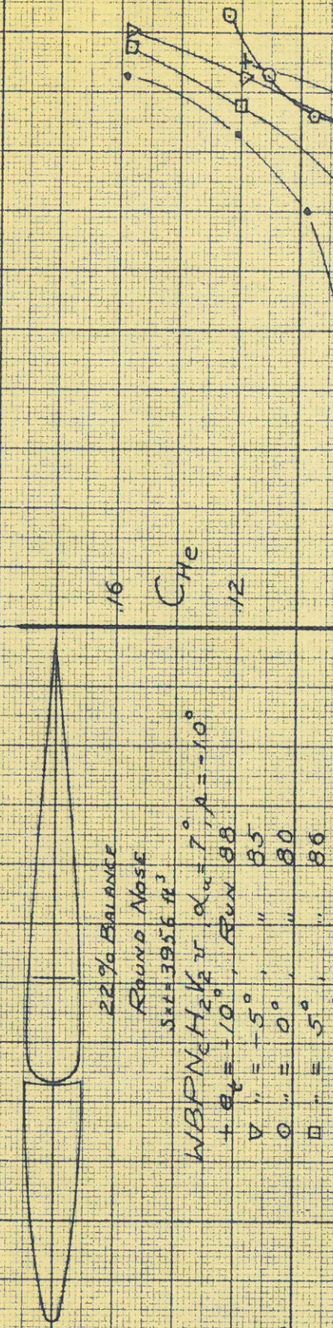


ELEVATOR HINGE MOMENT WITH H_2V_{24} WITH SLIPSTREAM SIMULATED


C_L
.6
.8
1.0
1.2
1.4
1.6
1.8
0°
4°
8°
α
12°
16°
WBPN$_6$H$_2$V$_2$F $^{40}_{0}$, ϵ_t=0°, i=-1°
× ε = 0° RUN 221
□ " -10° " 222
• " -15° " 223
○ " -20° " 224
--+-- ε FREE " 103
.30
.20
$C_{M_{C.G.}}$
.10
4°
ε
0
0°
-.10
4°
-.20
8°



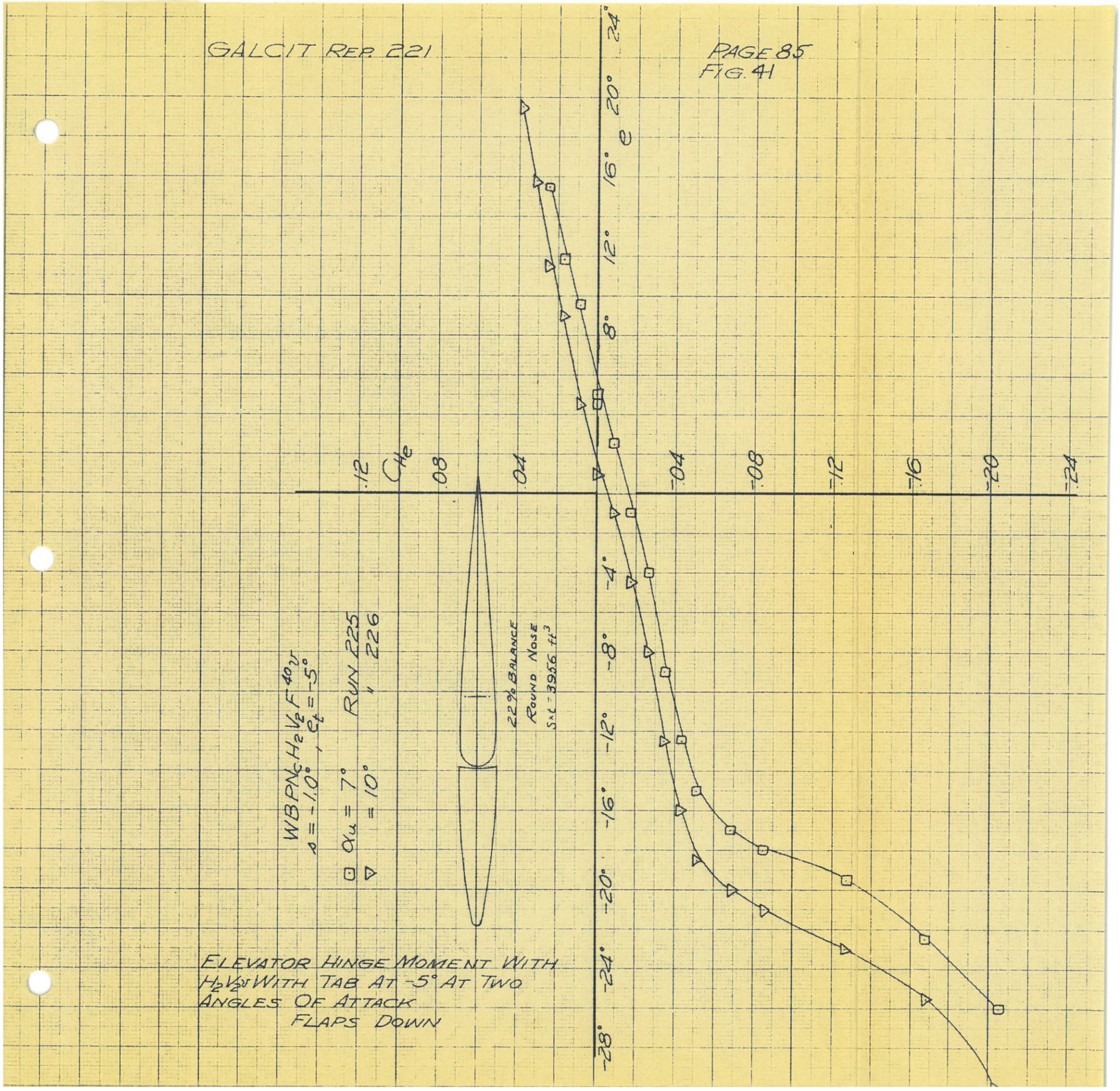
ELEVATOR HINGE MOMENT & EFFECTIVENESS WITH $H_2 V_2 V$ FLAPS DOWN



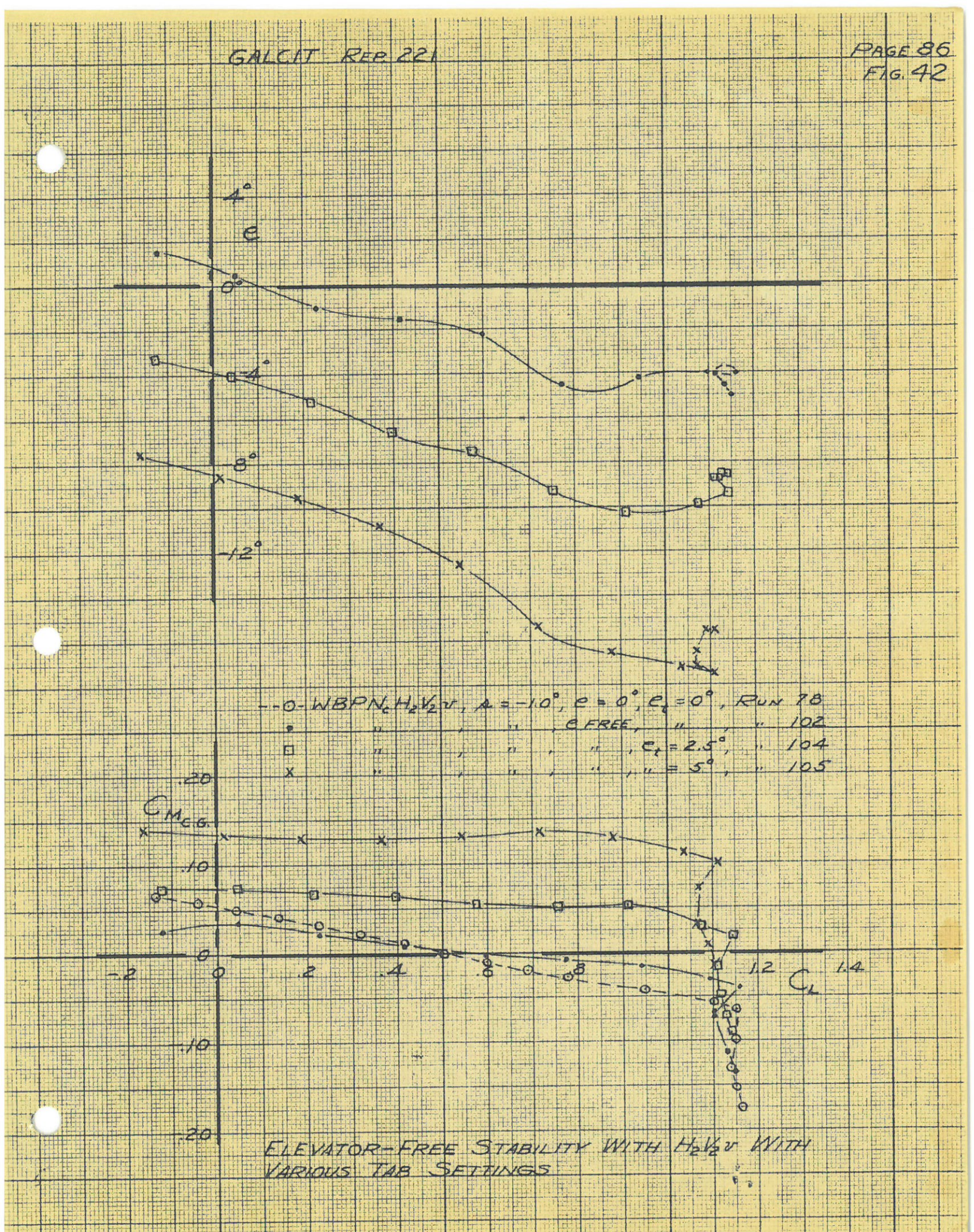
22% Balance
Round Nose
$S_{wf} = 3956$ ft²

$WBPN_0 H_2 V_2$ tr $\alpha_w = 7°$, $i_t = -1.0°$
$+\delta_t = +10°$, Run 88
▽ " $= -5°$, " 85
○ " $= 0°$, " 80
□ " $= 5°$, " 86
◇ " $= 10°$, " 87

ELEVATOR HINGE MOMENT WITH
$H_2 V_2$ tr WITH VARIOUS TAB SETTINGS

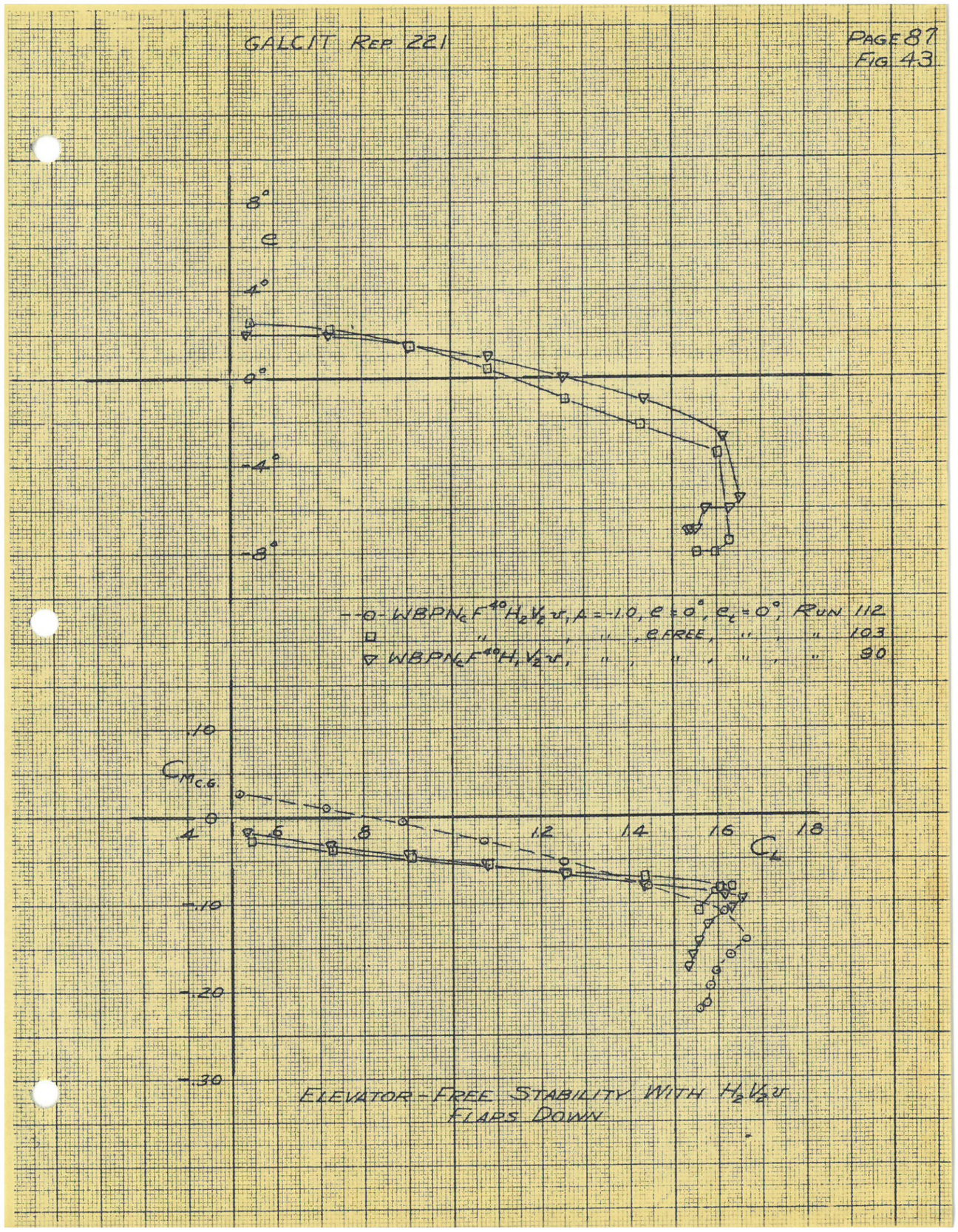


ELEVATOR HINGE MOMENT WITH H_2V_2 WITH TAB AT -5° AT TWO ANGLES OF ATTACK
FLAPS DOWN



-·-○-WBPN$_2$H$_2$V$_2$v, $i_t = -1.0°$, $e = 0°$, $e_t = 0°$, RUN 78
• " " " " e FREE " " " 102
□ " " " " " $e_t = 2.5°$ " " 104
× " " " " " " $= 5°$ " " 105

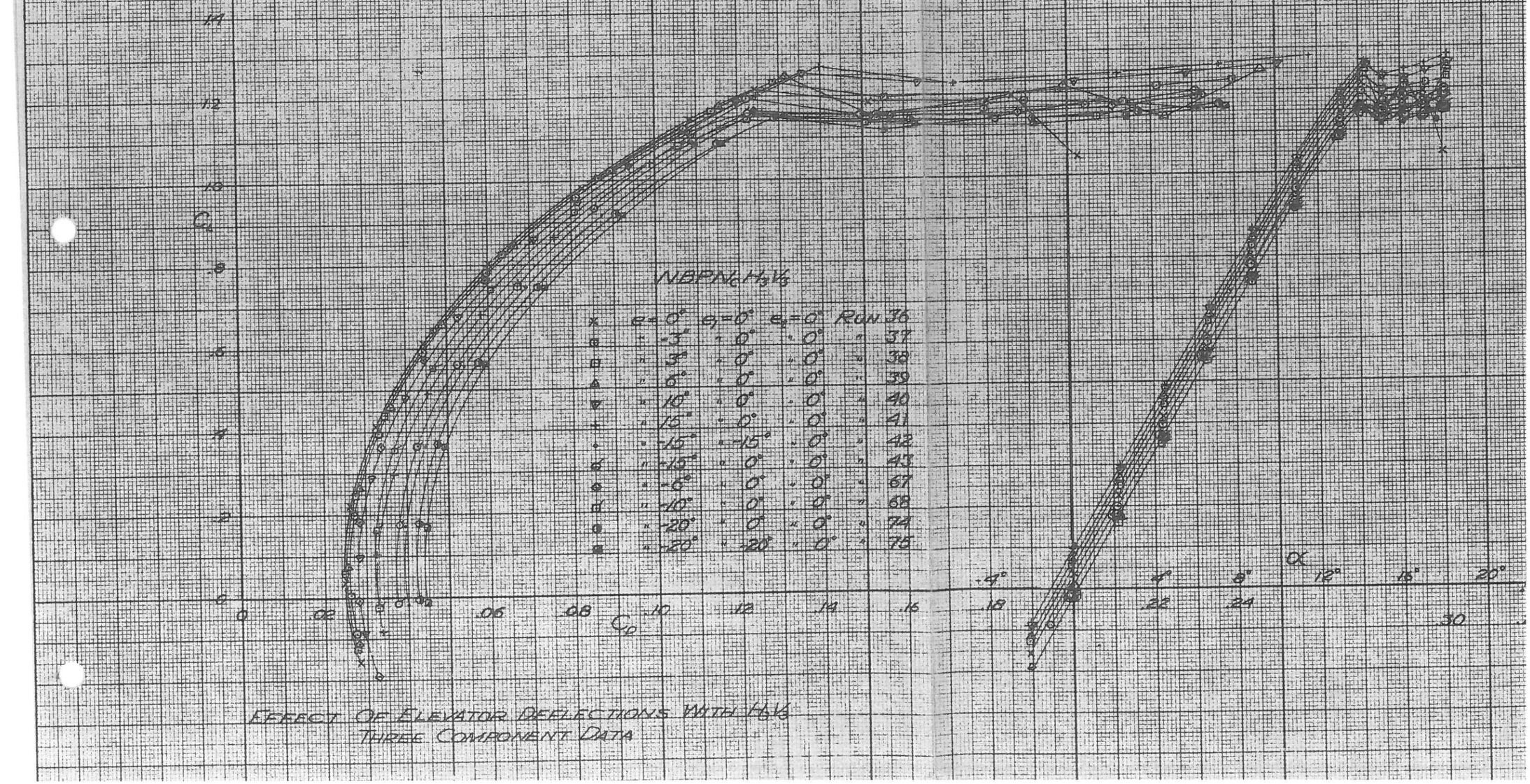
ELEVATOR-FREE STABILITY WITH H$_2$V$_2$v WITH VARIOUS TAB SETTINGS



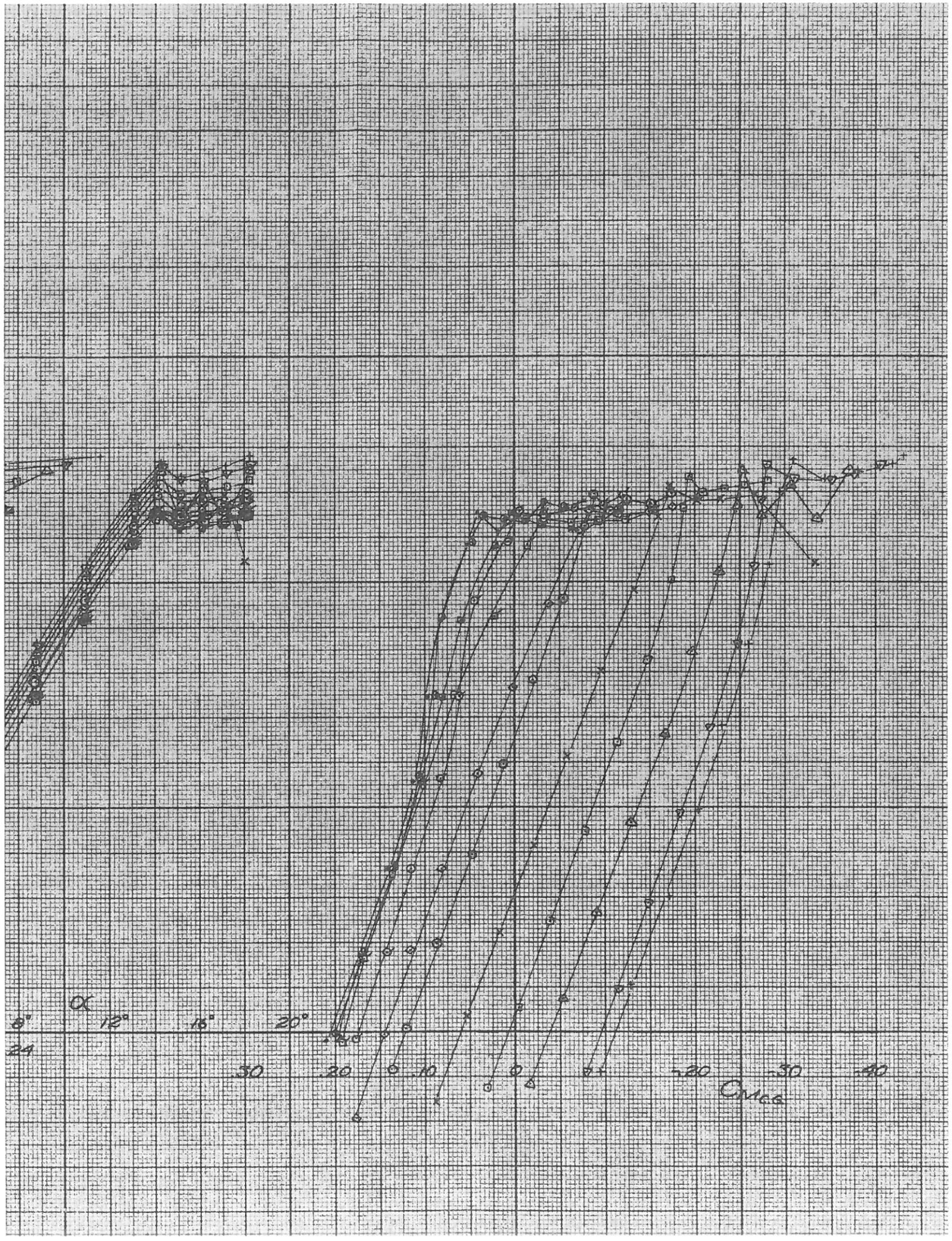
ELEVATOR - FREE STABILITY WITH H$_2$V$_2$T
FLAPS DOWN

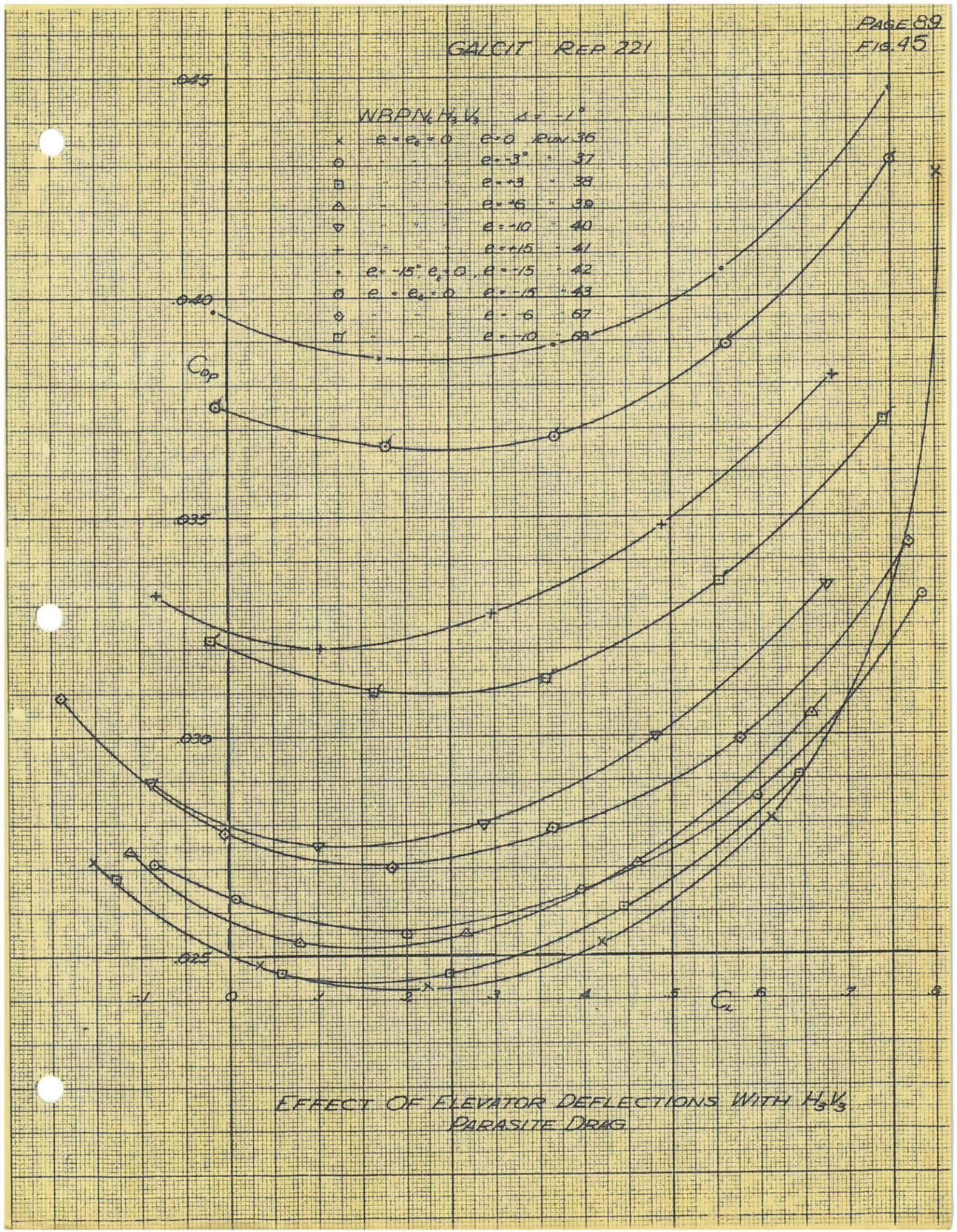
GALCIT REP 221

PAGE 88
FIG. 44

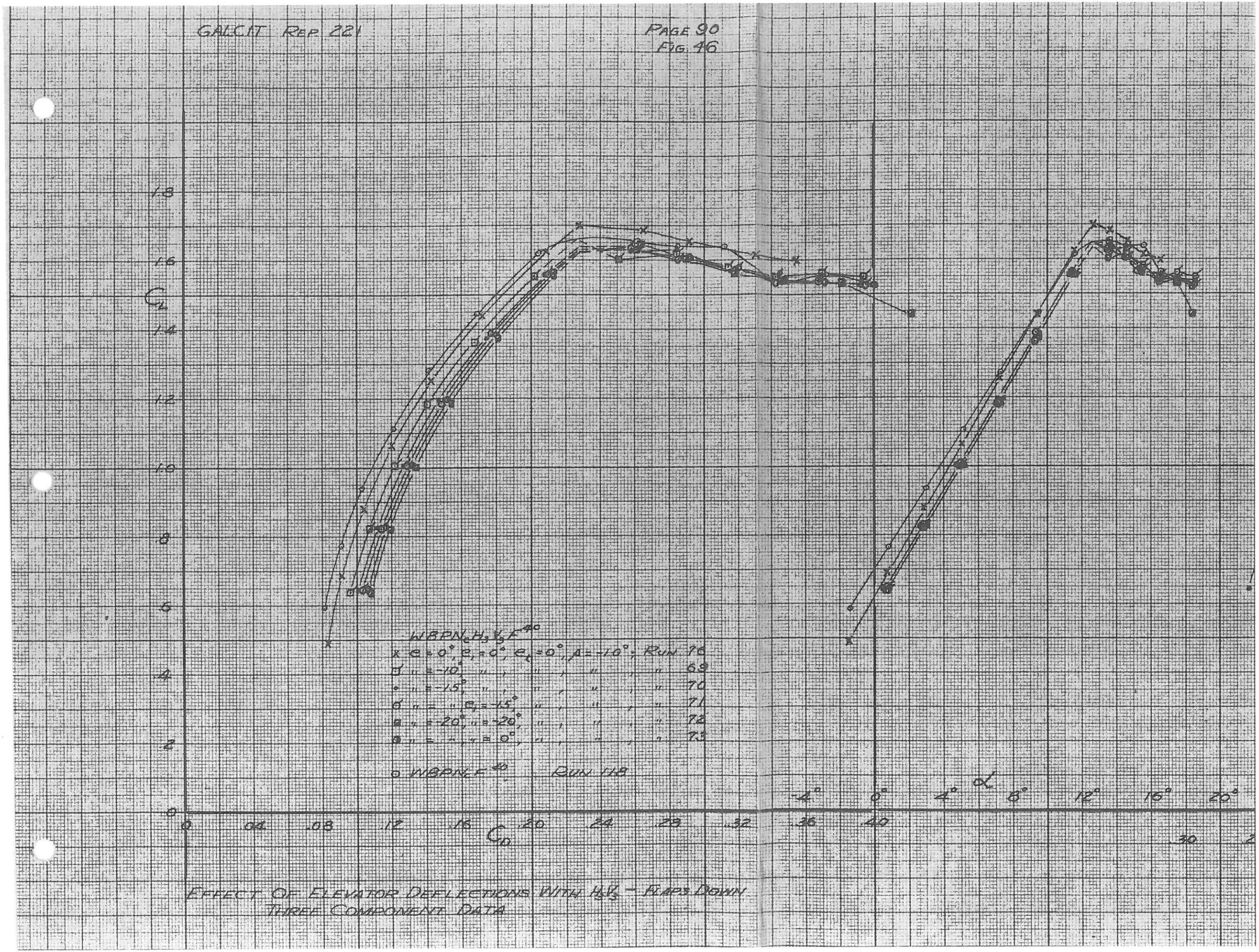


EFFECT OF ELEVATOR DEFLECTIONS WITH H3 H5
THREE COMPONENT DATA

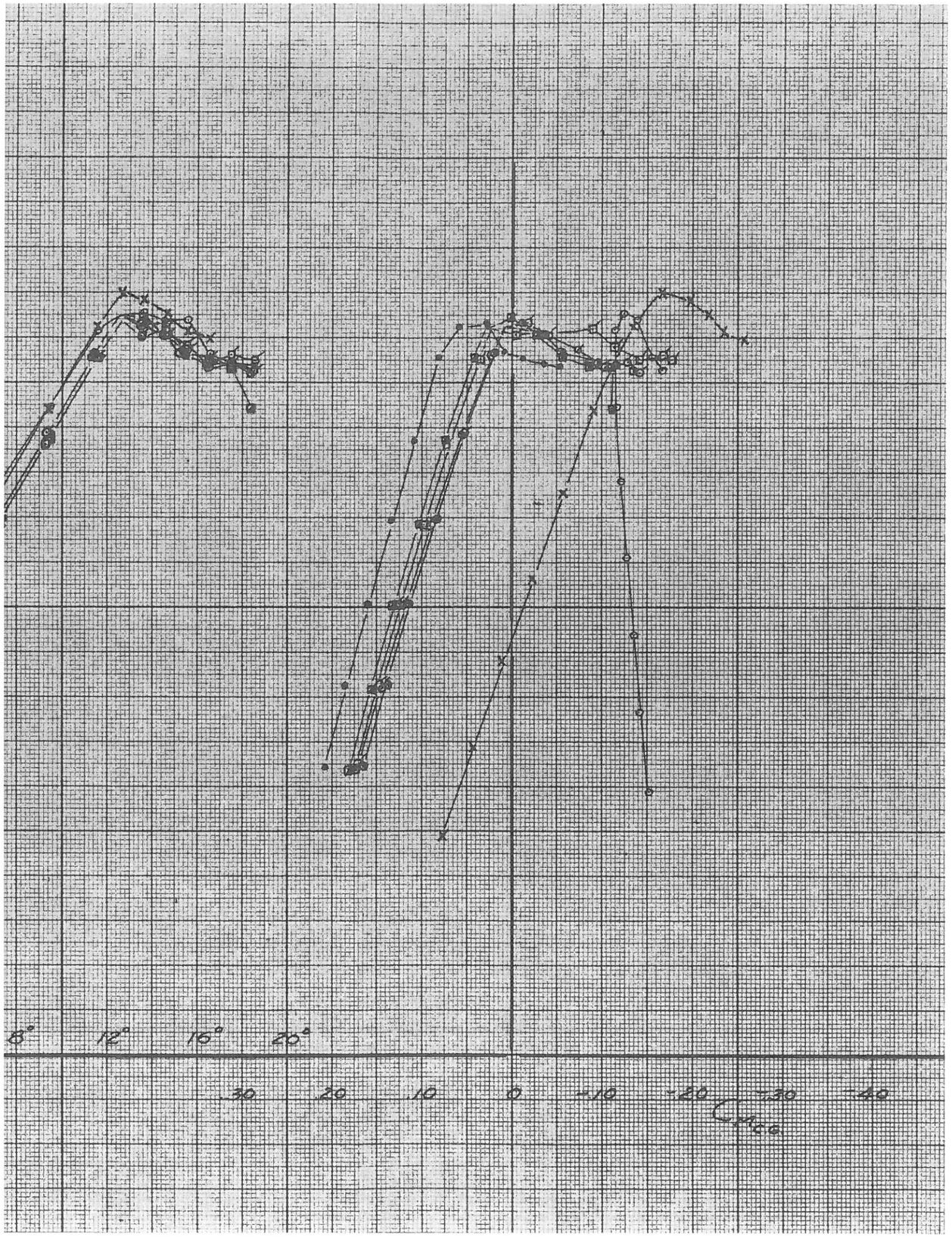

α
8°
12°
16°
20°
24
30
20
10
0
-10
-20
-30
-40
$C_{M_{c/4}}$

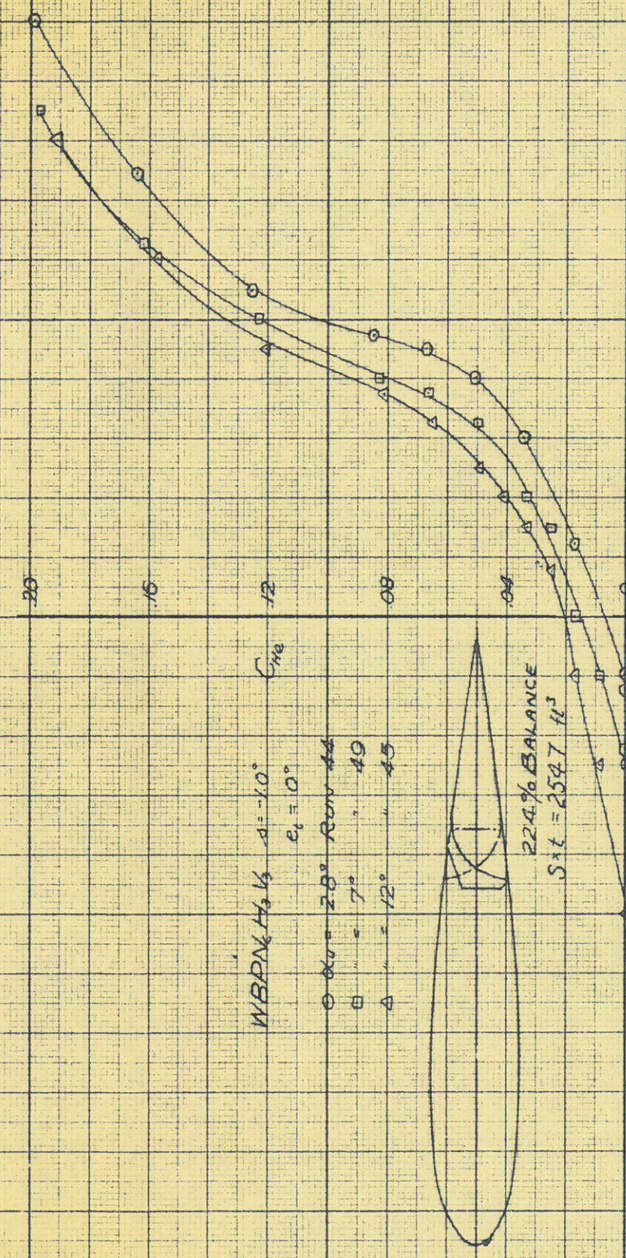


EFFECT OF ELEVATOR DEFLECTIONS WITH H_3V_3
PARASITE DRAG



EFFECT OF ELEVATOR DEFLECTIONS WITH H_3V_3 – FLAPS DOWN
THREE COMPONENT DATA

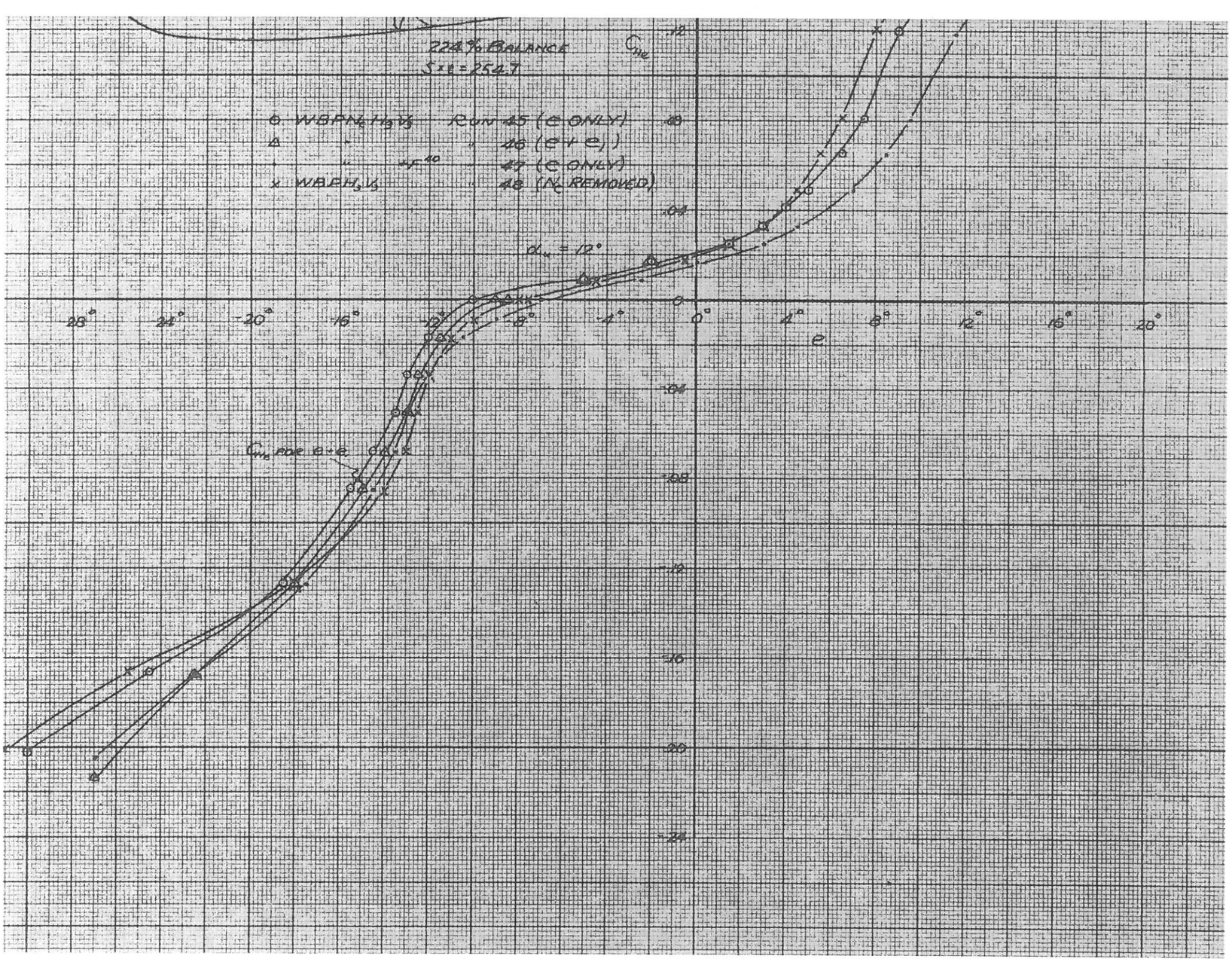

8°
12°
16°
20°
30
20
10
0
-10
-20
-30
-40
$C_{x_{tot}}$

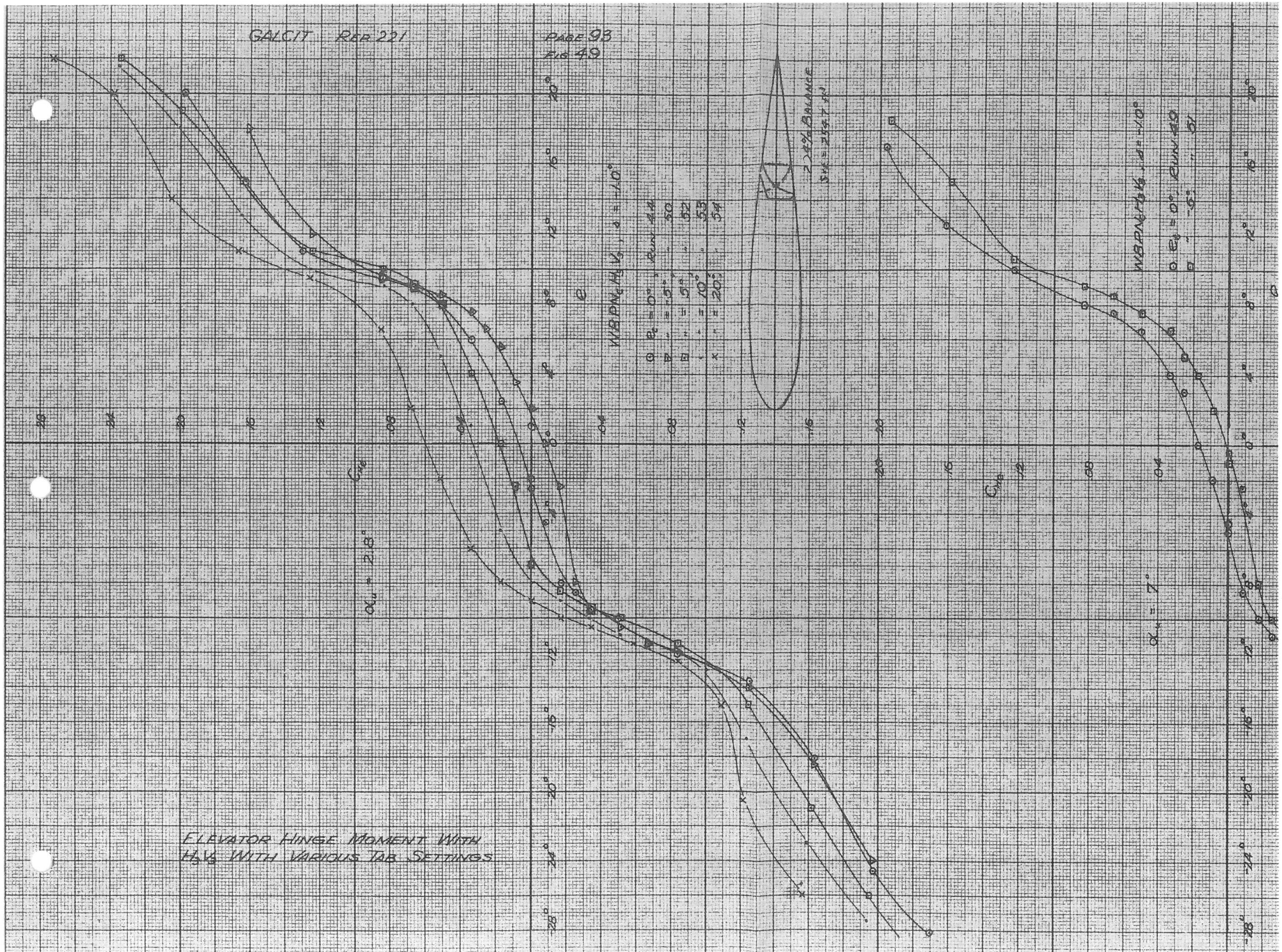


ELEVATOR HINGE MOMENT WITH H_3V_5 AT VARIOUS ANGLES OF ATTACK

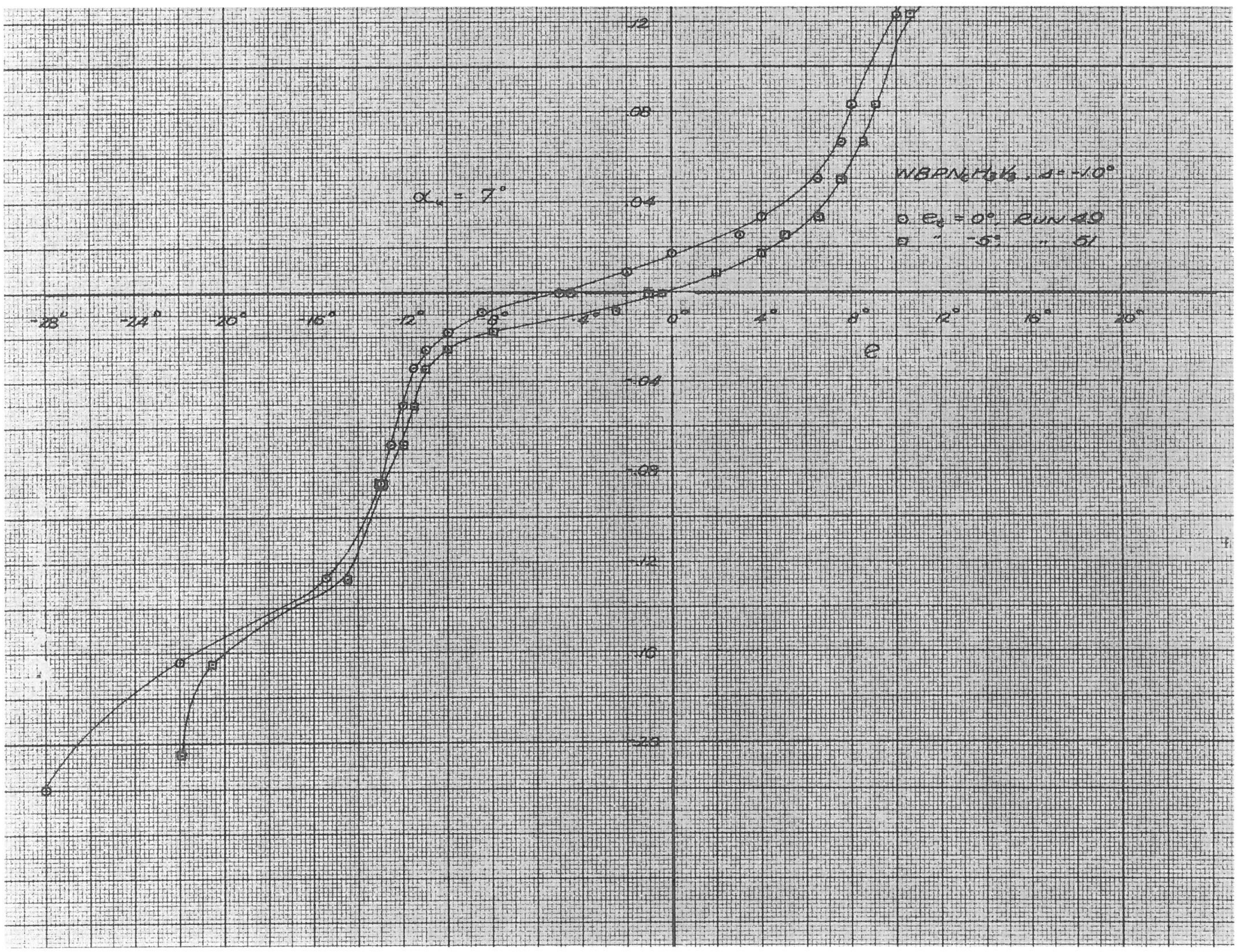
FIG. 48

EFFECT OF ELEVATOR EXTENSION, FLAPS, AND NACELLES ON ELEVATOR HINGE MOMENT WITH H_3V_3


22.4% BALANCE
S×ℓ = 254.7
C_{m_c}
○ WBPH$_2$H$_3$V$_5$ RUN 45 (C ONLY)
△ " " 46 (C+V C)
+ " " 47 (C ONLY)
× WBEH$_3$V$_5$ " 48 (V$_c$ REMOVED)
α_w = 12°
C_{m_c} FOR C+V
C
12
8
4
0
-4
-8
-12
-16
-20
-24
-28°
-24°
-20°
-16°
-12°
-8°
-4°
0°
4°
8°
12°
16°
20°

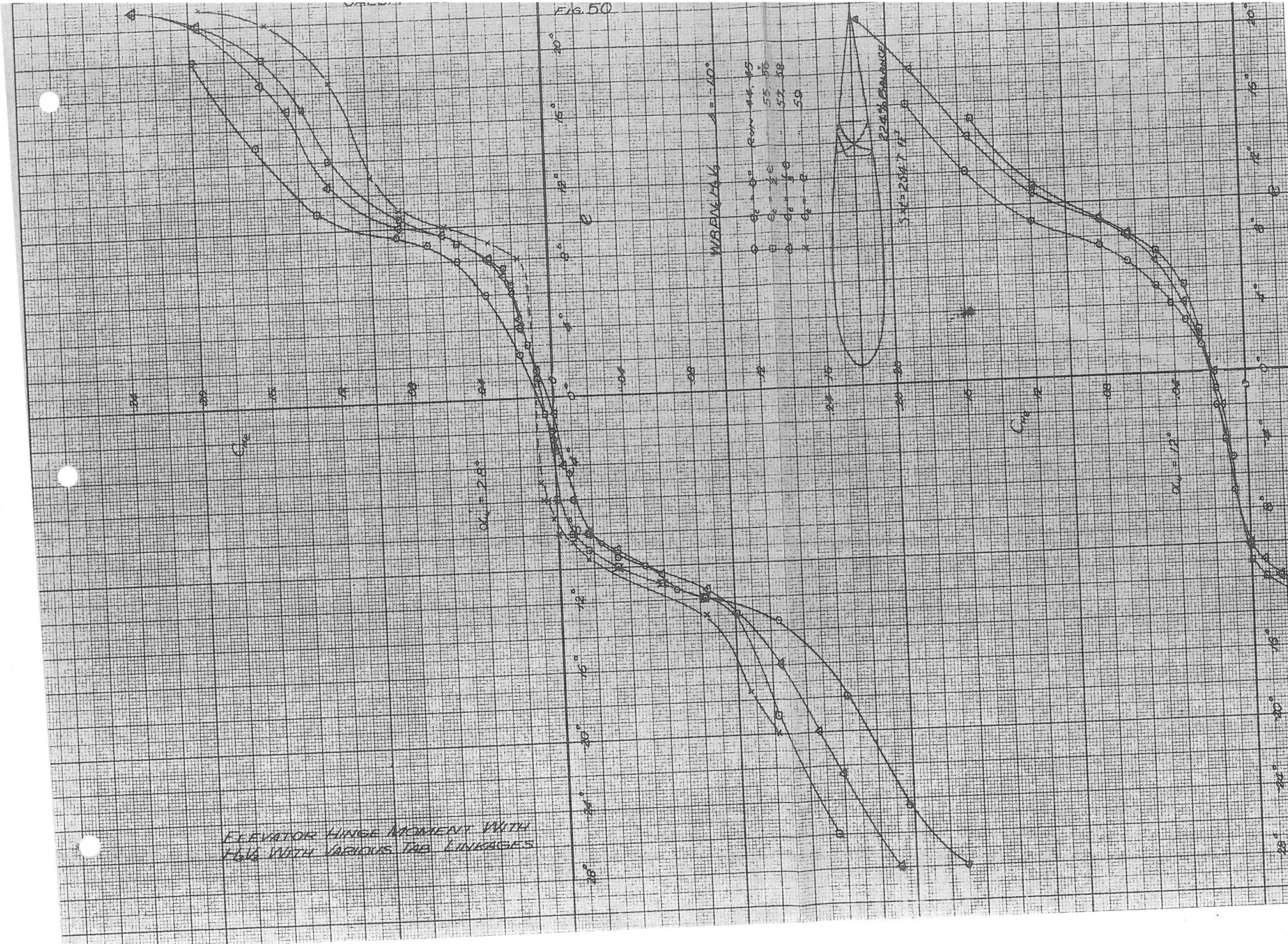


ELEVATOR HINGE MOMENT WITH
H_3V_3 WITH VARIOUS TAB SETTINGS



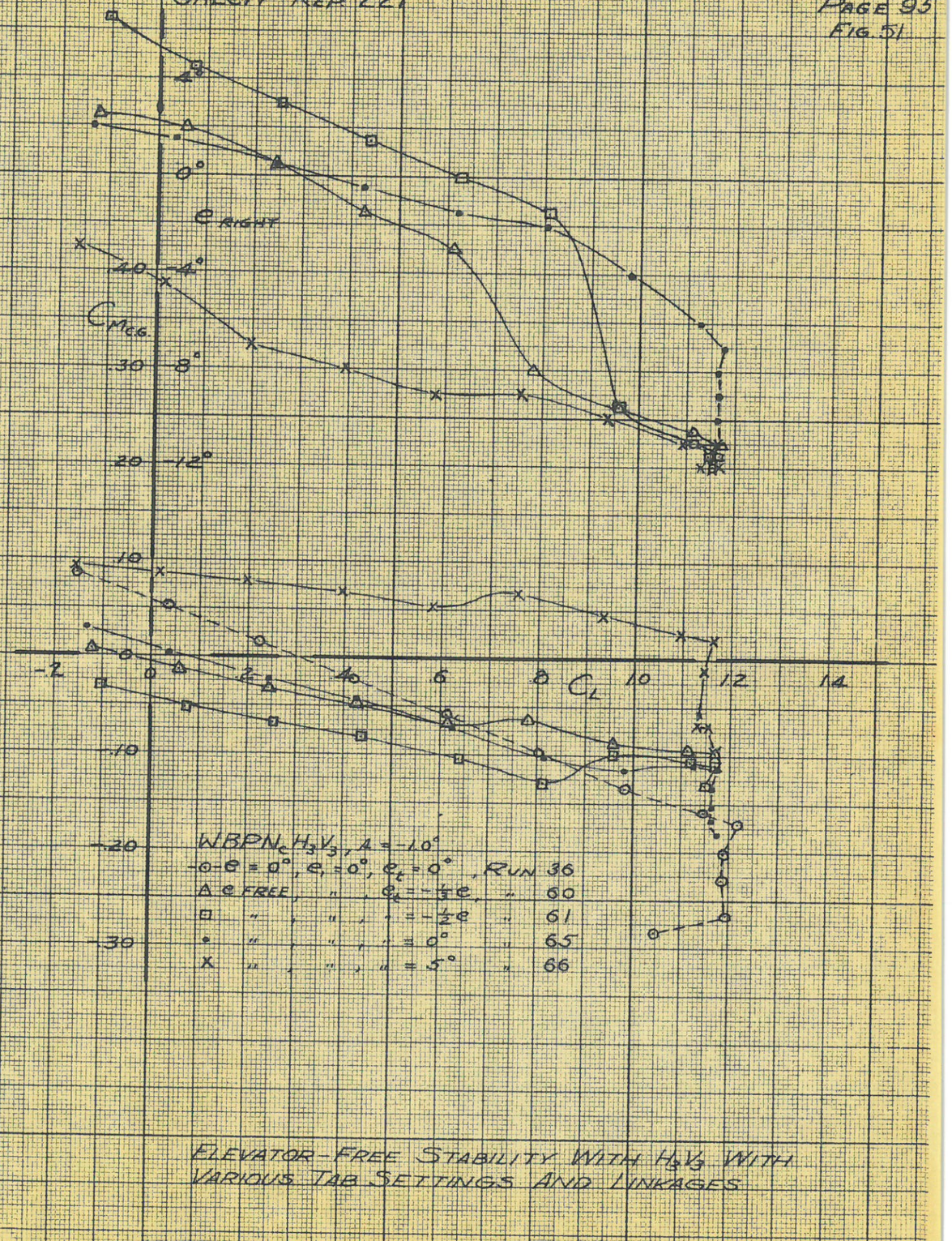
WBPN₄H₃V₃, δ = -10°
○ e_t = 0°, RUN 49
□ " -5°, " 51
α_u = 7°
e

FIG. 50



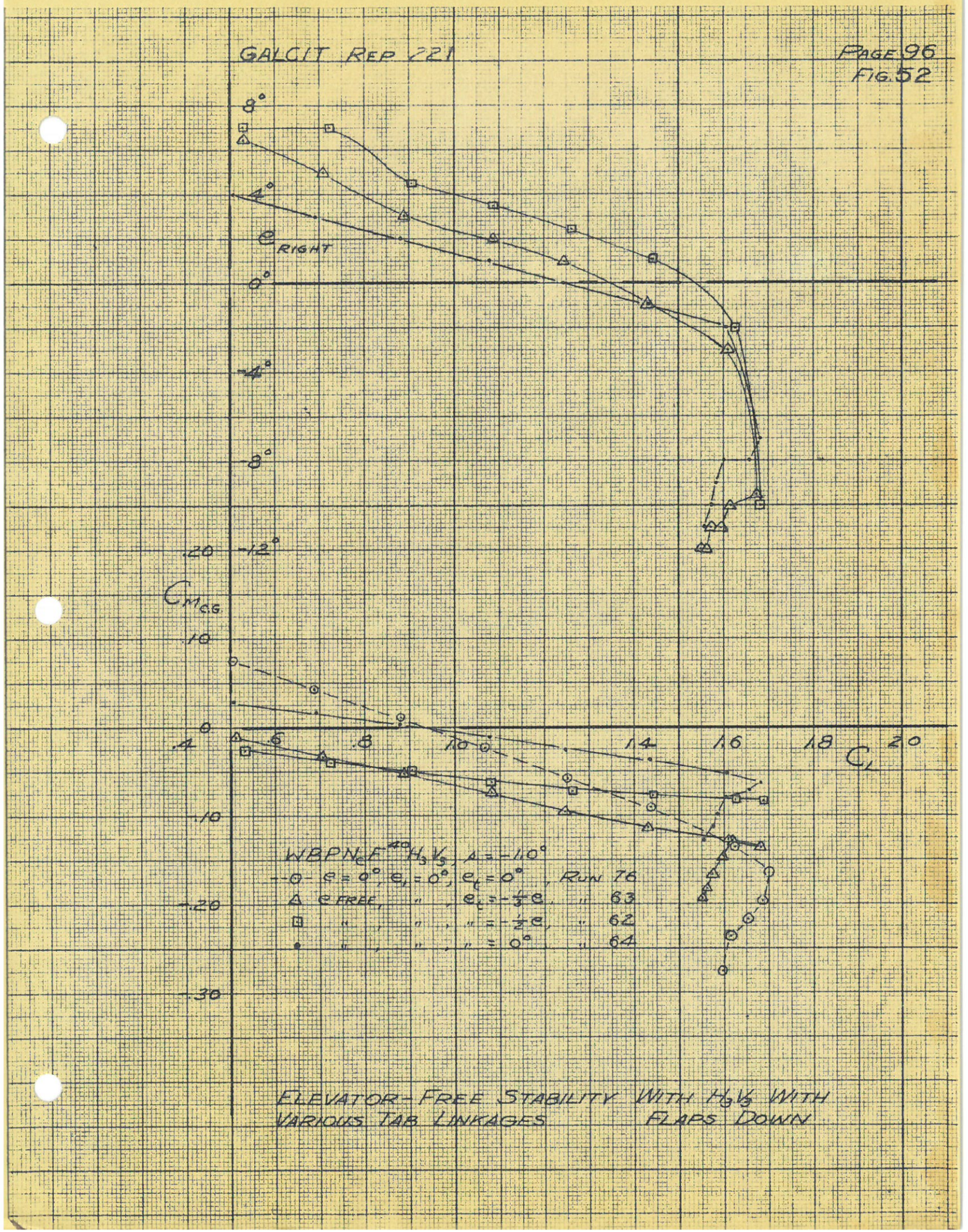
ELEVATOR HINGE MOMENT WITH
H0/L4 WITH VARIOUS TAB LINKAGES

0°
4°
8°
12°
16°
20°
24°
28°
32°
36°
40°
44°
48°
52°
56°
60°
64°
68°
72°
76°
80°
84°
88°
92°
96°
100°
104°
108°
112°
116°
120°
124°
128°
132°
136°
140°
144°
148°
152°
156°
160°
164°
168°
172°
176°
180°
184°
188°
192°
196°
200°
204°
208°
212°
216°
220°
224°
228°
232°
236°
240°
244°
248°
252°
256°
260°
264°
268°
272°
276°
280°
284°
288°
292°
296°
300°
304°
308°
312°
316°
320°
324°
328°
332°
336°
340°
344°
348°
352°
356°
360°



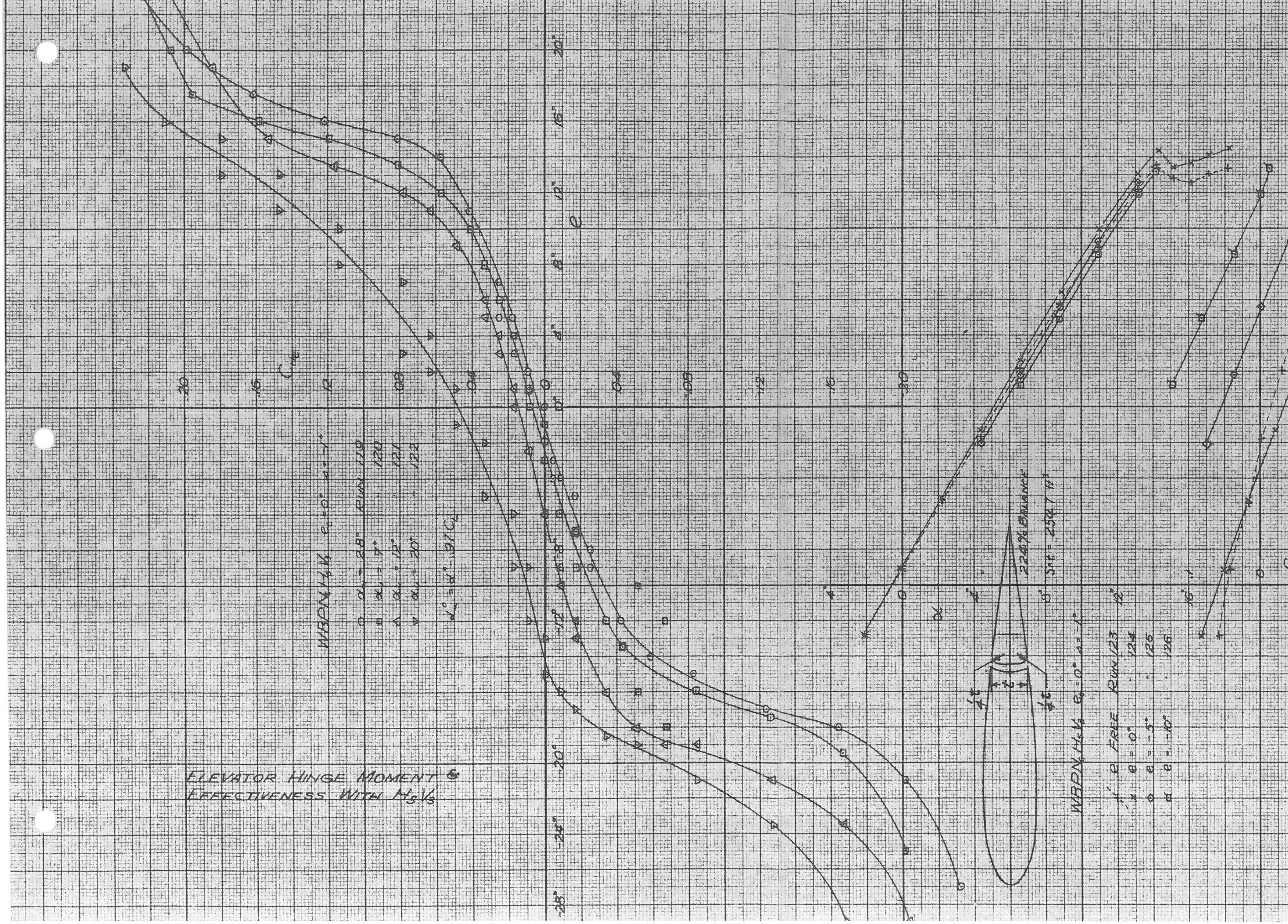
WBPN$_c$H$_3$V$_3$, $i_t = -1.0°$
-⊙- $\epsilon = 0°$, $\epsilon_1 = 0°$, $\epsilon_t = 0°$, RUN 36
Δ ϵ FREE, " , $\epsilon_t = -\frac{1}{3}\epsilon$, " 60
□ " , " , " $= -\frac{1}{2}\epsilon$ " 61
• " , " , " $= 0°$ " 65
X " , " , " $= 5°$ " 66

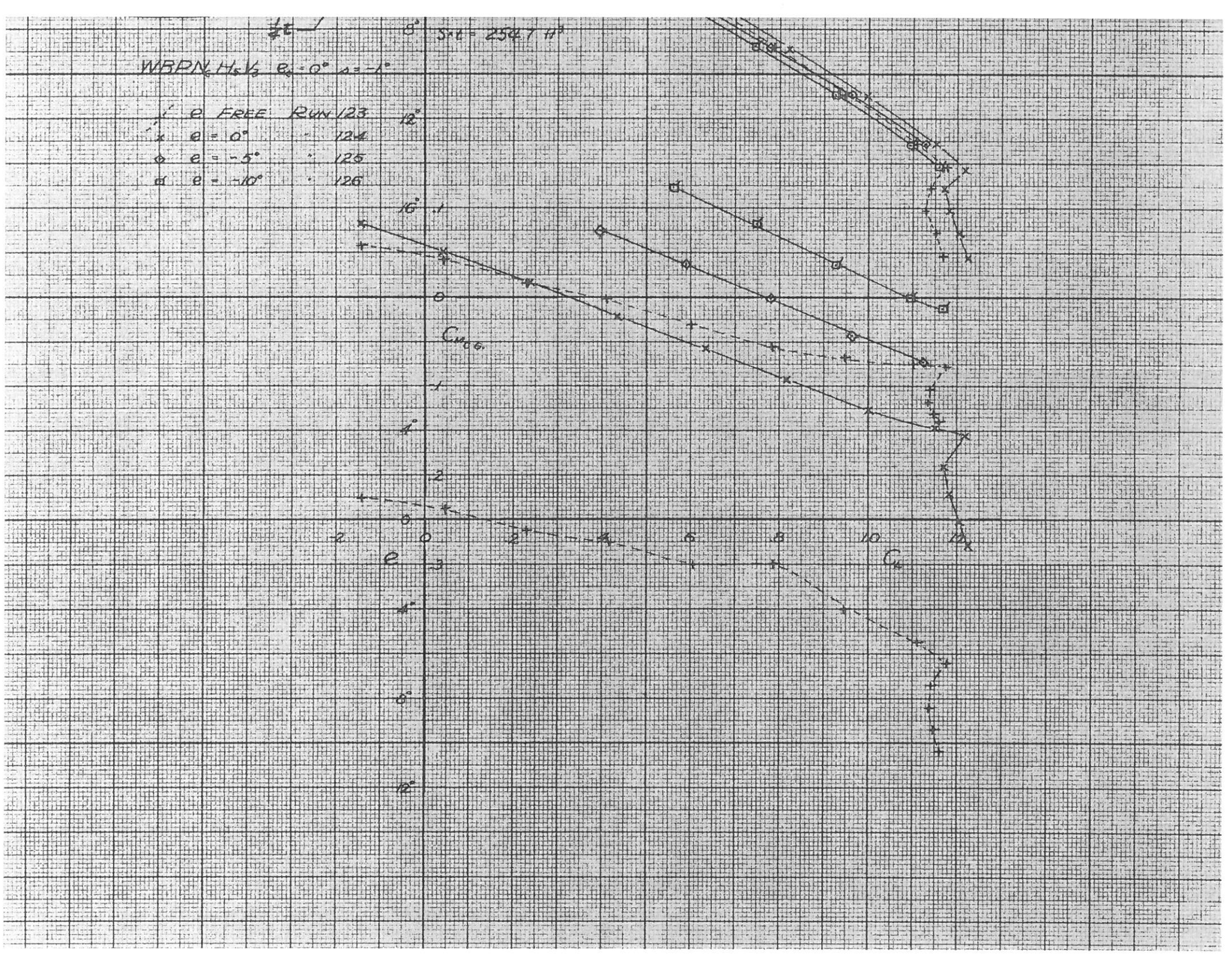
ELEVATOR-FREE STABILITY WITH H$_3$V$_3$ WITH VARIOUS TAB SETTINGS AND LINKAGES



ELEVATOR-FREE STABILITY WITH H_3V_5 WITH VARIOUS TAB LINKAGES FLAPS DOWN

FIG. 53

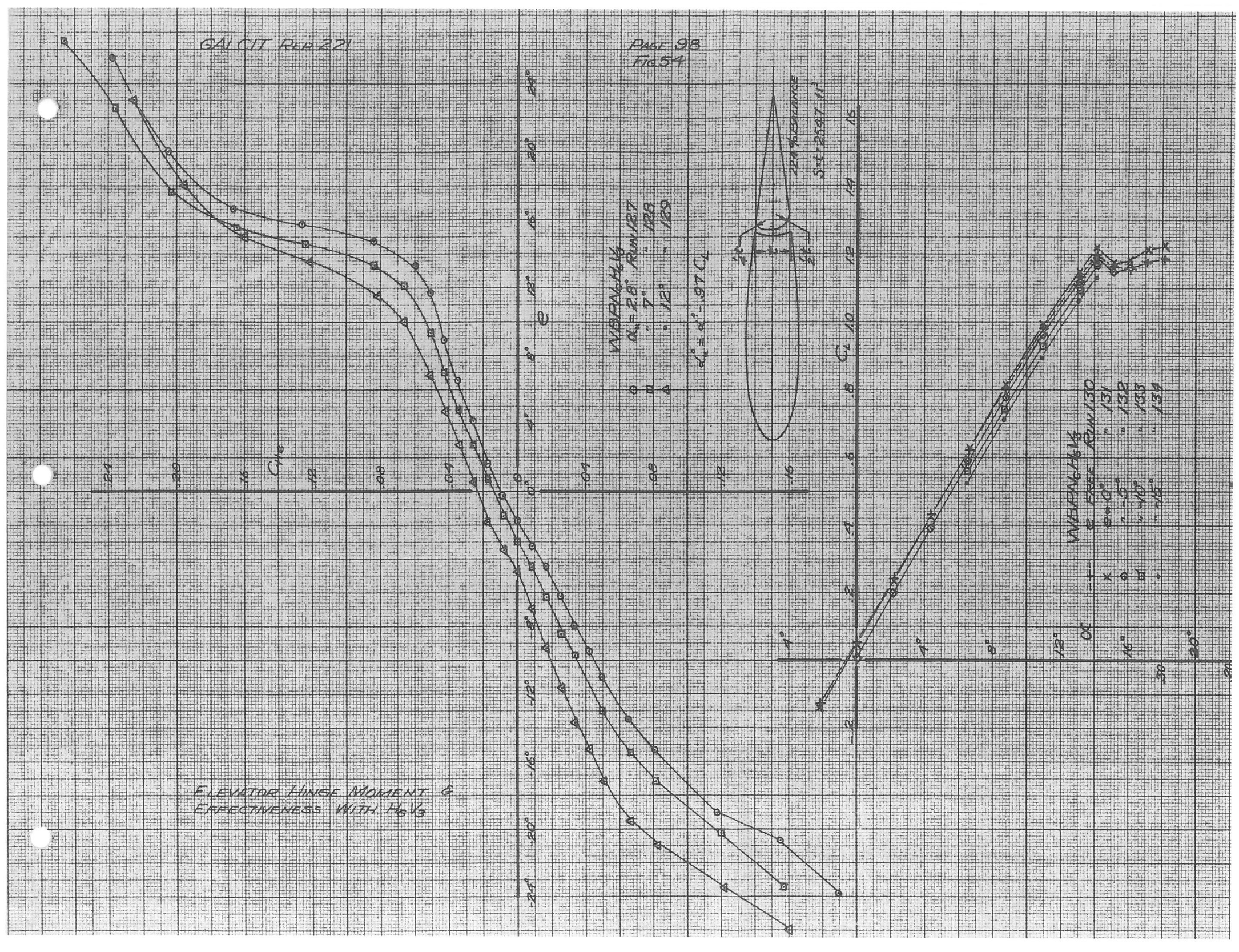


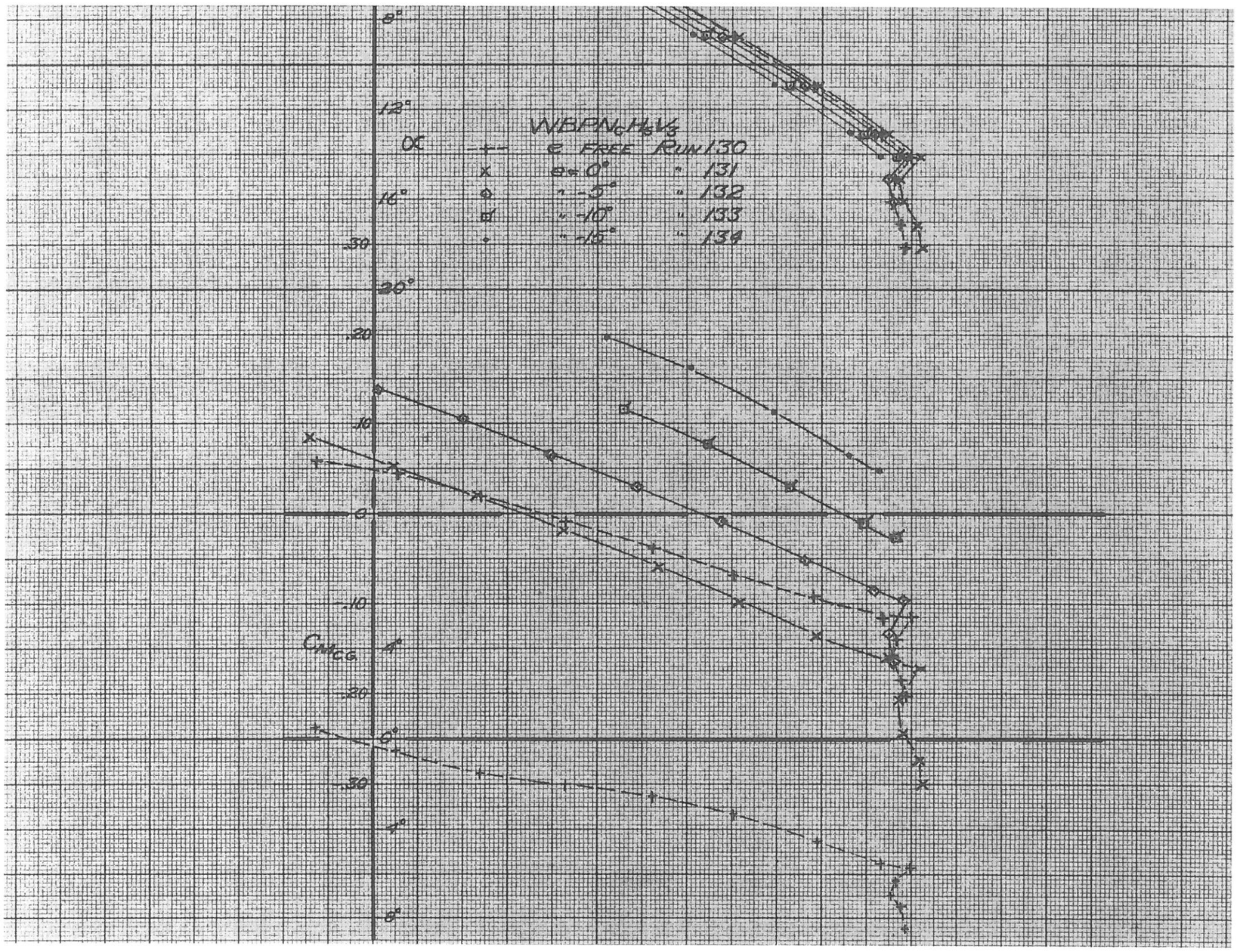

WBPN6 H5 ½ e₀ = 0° i₃ = -1°
Srt = 2547 ft²
e FREE RUN 123
e = 0° " 124
e = -5° " 125
e = -10° " 126
12°
16°
8°
4°
0
-4°
-8°
-12°
-2
-3
2
4
6
8
10
$C_{m_{c/4}}$
C_L
e

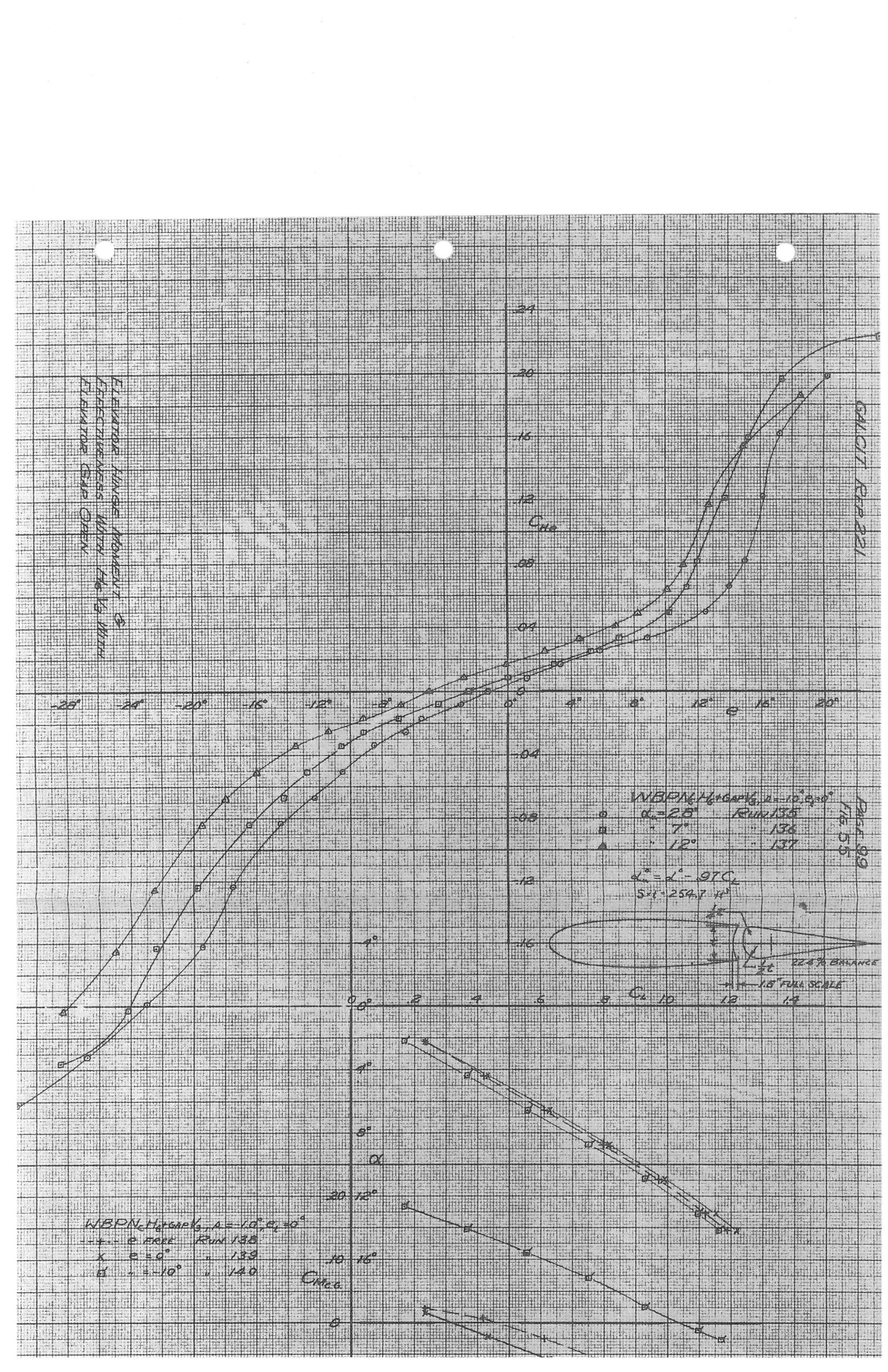
GALCIT Rep. 221

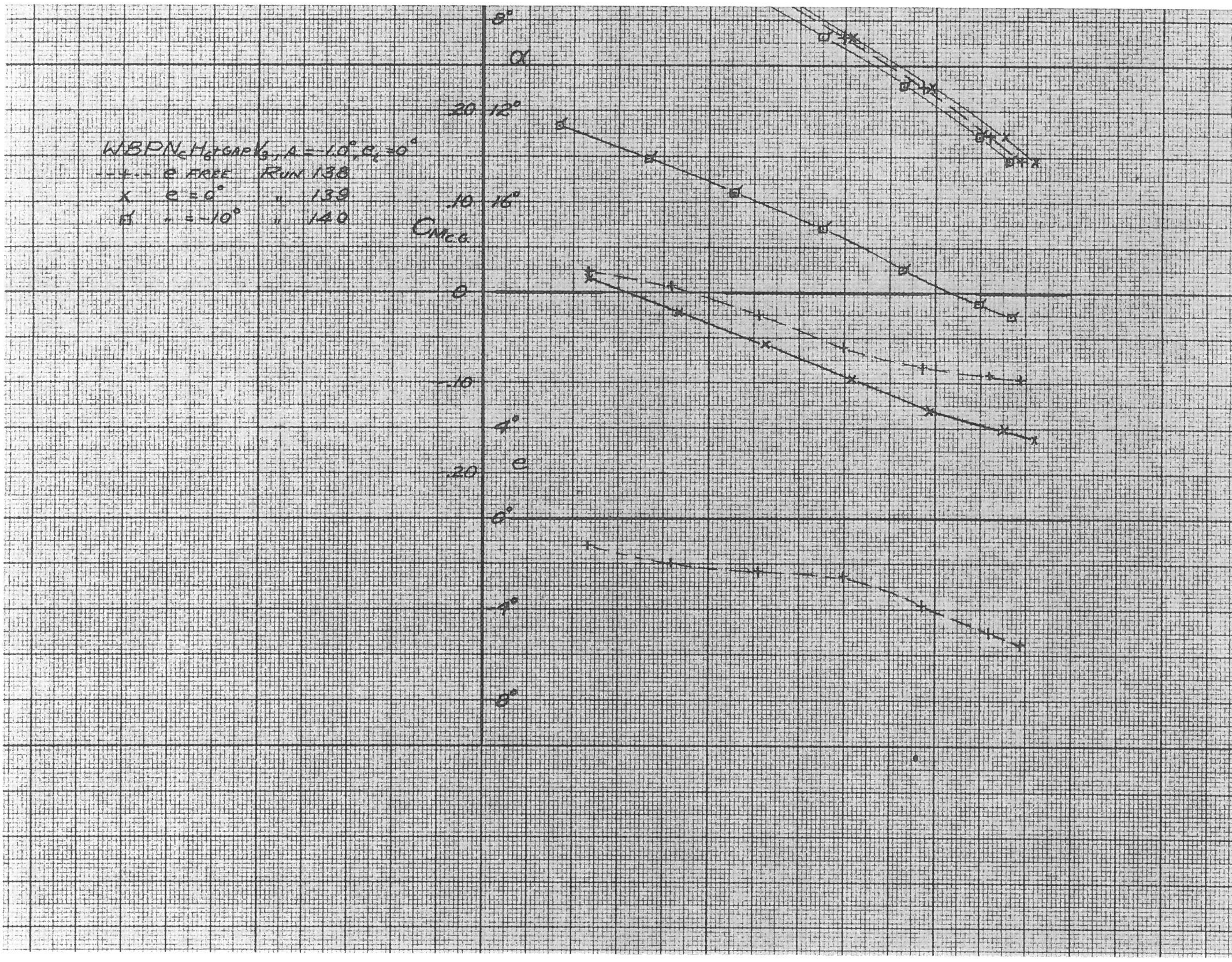
PAGE 98
FIG. 54

ELEVATOR HINGE MOMENT &
EFFECTIVENESS WITH $H_6 V_3$



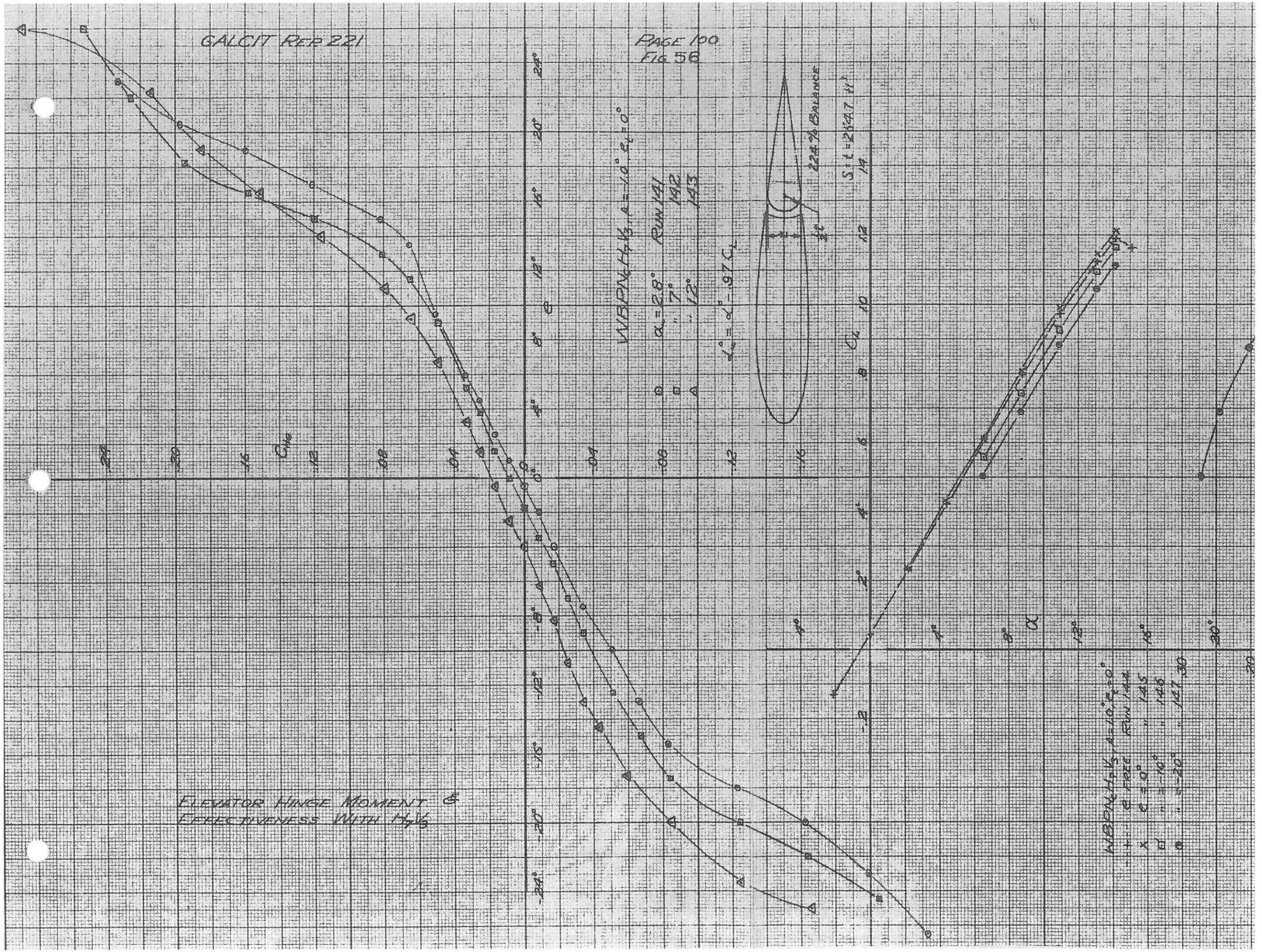

WBPN6H6V3
α
+ e FREE RUN 130
× e = 0° " 131
◇ " -5° " 132
□ " -10° " 133
• " -15° " 134
8°
12°
16°
.30
20°
.20
.10
0
-.10
$C_{M_{C.G.}}$
4°
-.20
0°
-.30
4°
8°


ELEVATOR HINGE MOMENT & EFFECTIVENESS WITH THE Vg WITH ELEVATOR GAP OPEN
GALCIT RP-221
PAGE 89
FIG 55
C_{He}
$C_{Mc.g.}$
C_L
α
e
WBPN$_c$H$_6$+GAPV$_6$, i_t=-1.0°, ϵ_t=0°
α_w=2.8° RUN 135
7° 136
12° 137
$\alpha_w^\circ = \alpha^\circ - .97 C_L$
$S \times \ell = .254.7$ in^3
22.4% BALANCE
1.8" FULL SCALE
WBPN$_c$H$_6$+GAPV$_6$, i_t=-1.0°, ϵ_t=0°
e FREE RUN 138
e=0° " 139
e=-10° " 140

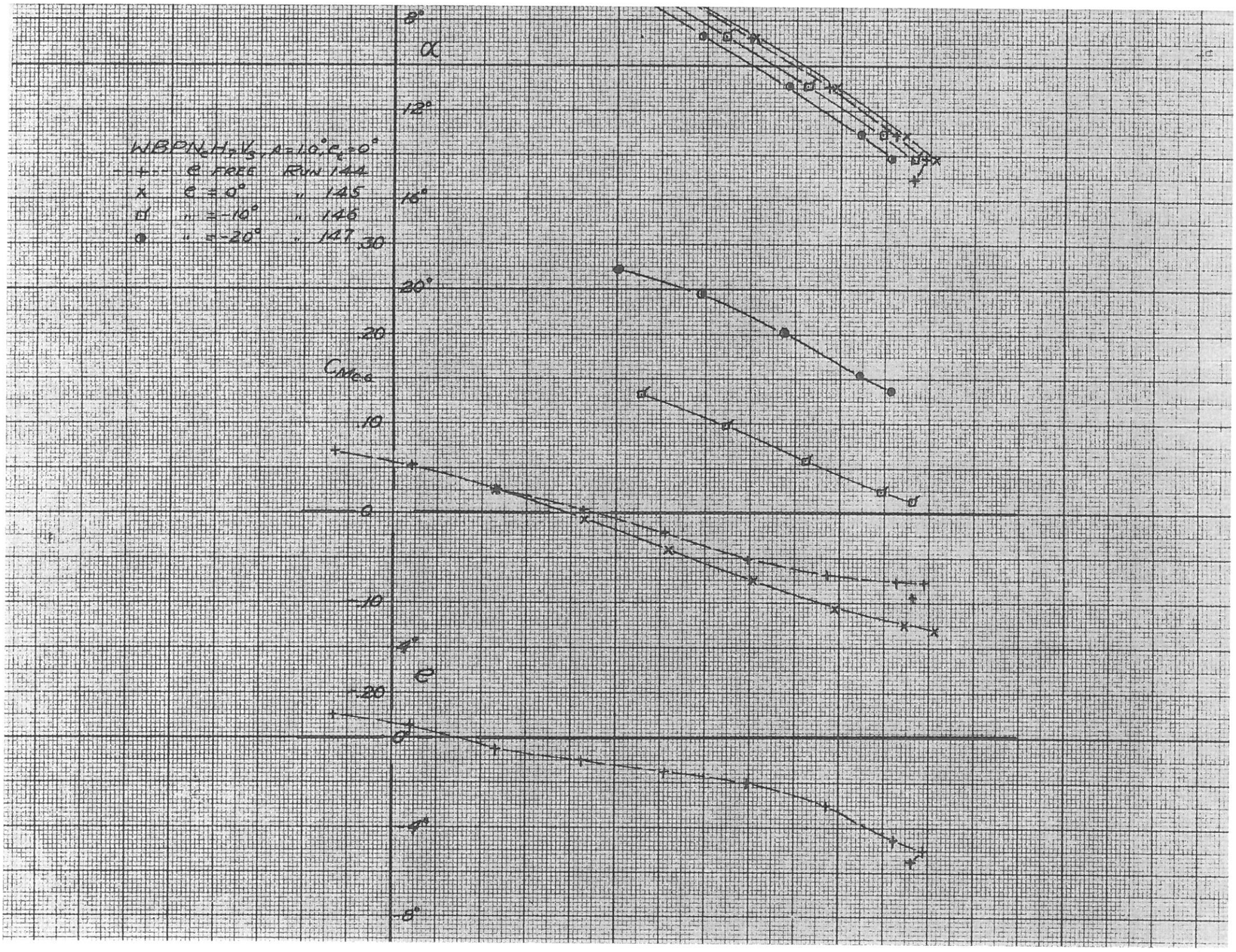

WBPN$_c$H$_6$+GAP V$_3$, A = -1.0°, e$_t$ = 0°
--+-- e FREE RUN 138
X e = 0° " 139
⊡ " = -10° " 140
$C_{M_{C.G.}}$
α
e
8°
12°
16°
4°
0°
4°
8°
.20
.10
0
-.10
-.20

GALCIT REP 221

PAGE 190
FIG 56



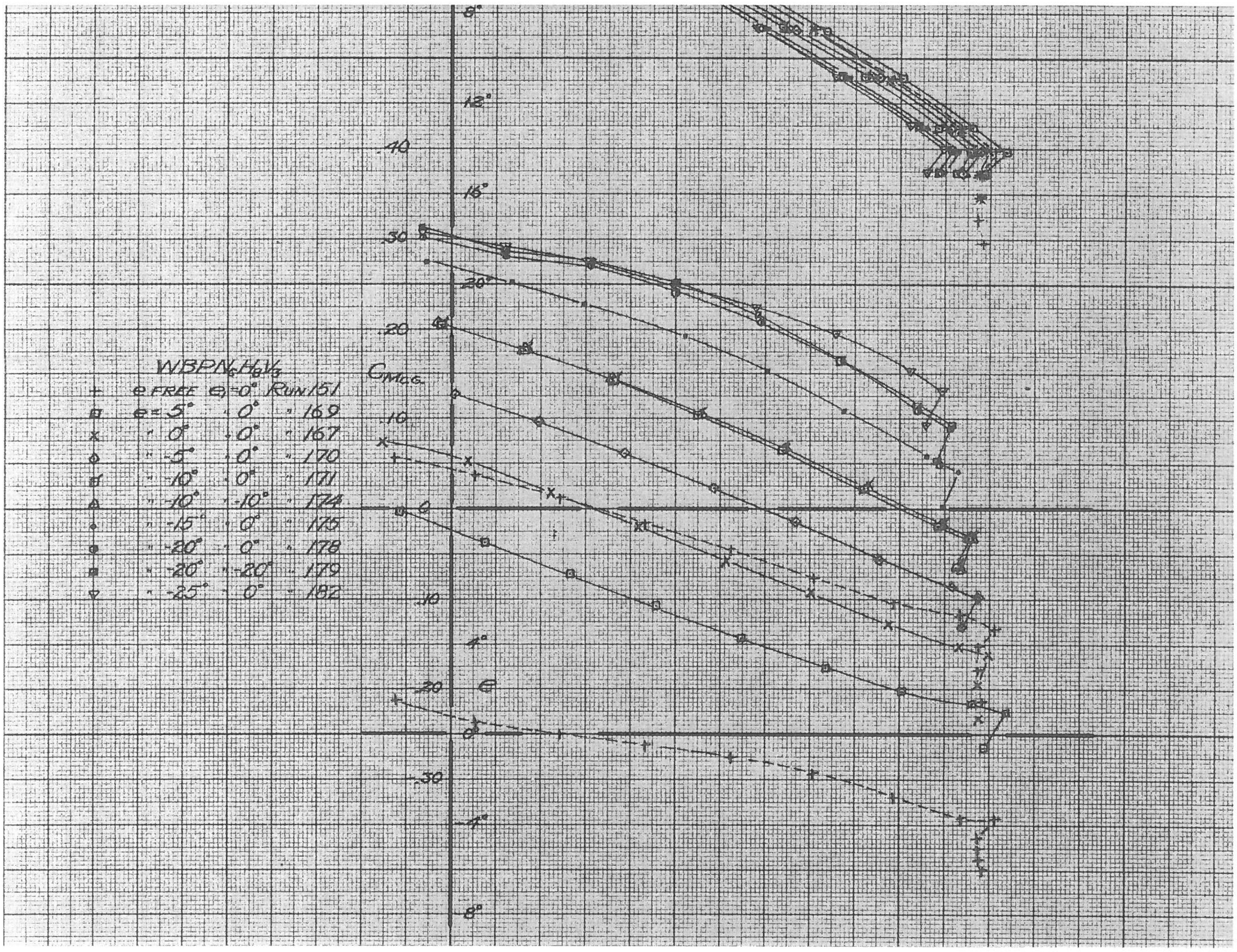
ELEVATOR HINGE MOMENT & EFFECTIVENESS WITH $H_2 V_5$


WBPN₂H₂V₅, A=10°, i_t=0°
+ e free Run 144
x e = 0° " 145
□ " = -10° " 146
● " = -20° " 147
8°
α
12°
16°
20°
20
$C_{M_{c.g.}}$
10
0
-10
4°
e
-20
0°
-4°
-8°

GALCIT. REP. 221

PAGE 101
FIG. 57

ELEVATOR HINGE MOMENT &
EFFECTIVENESS WITH H_8 ½

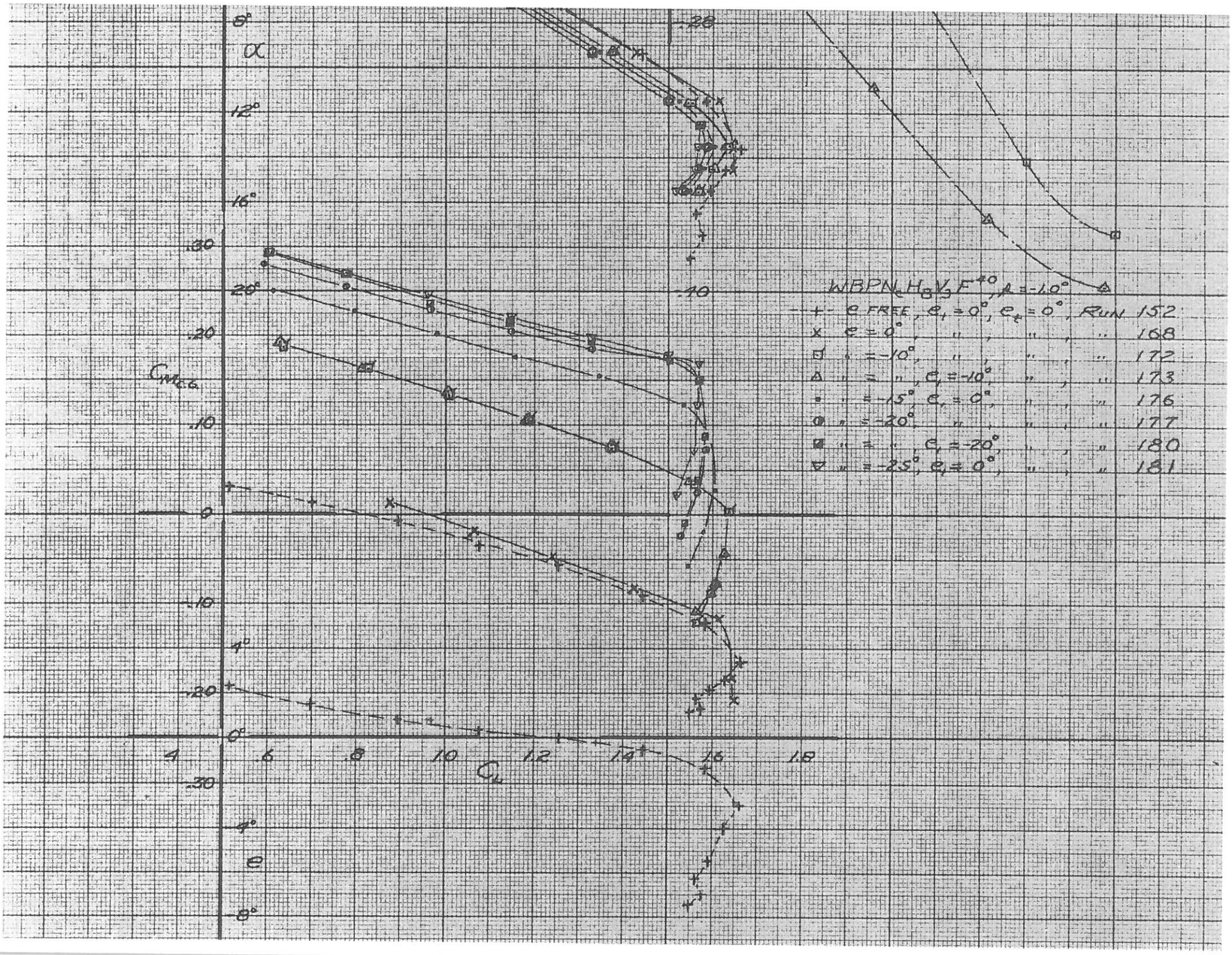


WBPN6H6V3
+ e FREE ε -0° RUN 151
□ e = 5° " 0° " 169
× " 0° " 0° " 167
◇ " -5° " 0° " 170
" -10° " 0° " 171
△ " -10° " -10° " 174
" -15° " 0° " 175
" -20° " 0° " 178
" -20° " -20° " 179
▽ " -25° " 0° " 182
CMCG
.40
.30
.20
.10
0
.10
.20
.30
8°
12°
16°
20°
4°
ε
0°
4°
8°

GALCIT REP. 221

PAGE 102
FIG. 58

ELEVATOR HINGE MOMENT & EFFECTIVENESS WITH H_{θ_2}, FLAPS DOWN.


α
8°
12°
16°
20°
-20
-10
-.30
-.20
-.10
0
.10
$C_{m_{c.g.}}$
4°
0°
-4°
-8°
.4
.6
.8
1.0
1.2
1.4
1.6
1.8
C_L
e
WBPN$_6$H$_8$V$_3$F^{40}, i = -1.0°
+ e FREE, e_1 = 0°, e_t = 0°, RUN 152
x e = 0°, " , " , " 168
□ " = -10°, " , " , " 172
△ " = " , e_t = -10°, " , " 173
• " = -15°, e_t = 0°, " , " 176
◎ " = -20°, " , " , " 177
▣ " = " , e_t = -20°, " , " 180
▽ " = -25°, e_t = 0°, " , " 181